

IMPLICIT AND SELF-ATTRIBUTED ACHIEVEMENT GOALS:
RELATIONSHIPS WITH EFFORT AND PERSISTENCE

By

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Abstract

This dissertation investigates the existence of implicit, or non-conscious, achievement goals and their relationships with self-attributed achievement goals and two aspects of task performance: effort and persistence. One hundred twenty undergraduate and graduate students ranging in age from 18 to 59 participated in the study. The sample was 79 percent female and 81 percent White. Implicit achievement goal data were collected via the Picture Story Exercise followed by a self-attributed achievement goal measure, the Achievement Goal Questionnaire. Participants completed the d2 Test of Attention, receiving false feedback at regular intervals. The design was a randomized 2x2 factorial with all participants receiving self-referenced feedback (ascending or descending) and all participants receiving norm-referenced feedback (ascending or descending). Effort was improvement in response time and persistence was decision to quit or continue when given the explicit choice.

Multiple regression analyses were conducted predicting effort. Implicit mastery approach goals threatened task effort when participants received mixed feedback. When feedback was entirely descending, task effort improved with an increase in implicit performance approach. Self-attributed achievement goals were entirely unrelated to task effort.

Binomial logistic regression analyses were conducted predicting persistence. Participants in the ascending self-referenced condition were less likely to quit with higher self-attributed mastery approach scores. Those in the descending self-referenced condition were more likely to quit with higher self-attributed mastery approach scores. Participants in the descending norm-referenced condition were less likely to quit with higher self-attributed performance approach

scores and were more likely to quit with higher self-attributed performance avoidance scores.

Implicit achievement goals were entirely unrelated to task discontinuation.

These findings reveal that implicit achievement goals are distinct from self-attributed achievement goals, with both types of goals bearing different influence on two distinct aspects of task performance: effort and discontinuation. The addition of the implicit achievement goal construct to achievement goal models fortifies the model and further reveals the multifaceted nature of motivation.

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Table of Contents

Abstract	iii
Acknowledgements	v
Table of Contents	vi
List of Tables	viii
List of Figures	ix
Chapter 1: Introduction	1
Chapter 2: Literature Review	8
Defining Achievement Goals.....	9
Predictors and Outcomes of Achievement Goals	14
Operationalizing Achievement	25
Measuring Achievement Goals.....	28
Support for Implicit and Self-Attributed Achievement Goals	34
Measuring Implicit Achievement Goals	42
Research Questions and Hypotheses	44
Chapter 3: Methodology	48
Participants.....	48
Response Rate	48
Design	49
Procedures	49
Instruments.....	51
Data Analysis	60
Chapter 4: Results	62
Descriptive Statistics.....	62
Manipulation Check.....	65
Task Effort	66
Task Discontinuation	72

Chapter 5: Discussion	78
Relationships among Goal Scores	78
Task Effort	79
Task Discontinuation	84
Limitations and Future Studies	87
Conclusion	89
References.....	90
Appendix A: Consent Forms	102
Appendix B: Experimenter Script.....	105
Appendix C: d2 Test of Attention False Feedback Examples	106
Appendix D: Demographic Questionnaire	108
Appendix E: Debriefing.....	111
Appendix F: Achievement Goal Definitions from Beauchamp (2007) Pilot Study.....	112
Appendix G: Picture Story Exercise Stimuli.....	116
Appendix H: Examples of Coded Stories	119
Appendix I: Modified Achievement Goal Questionnaire.....	128
Appendix J: Correlations among Independent Variables	129

List of Tables

Table 1: Mean (SD) Picture Story Exercise Word Counts and Goal Scores	63
Table 2: Mean (SD) Achievement Goal Questionnaire Goal Scores	64
Table 3: Correlations among Implicit and Self-attributed Goal Scores ($N = 120$)	65
Table 4: Summary of Hierarchical Regression Analysis for Implicit Achievement Goals Predicting Response Time	68
Table 5: Partial Correlations between Response Time and Implicit Mastery Approach by Condition, Controlling for 2 nd Block Response Time	70
Table 6: Partial Correlations between Response Time and Implicit Performance Approach by Condition, Controlling for 2 nd Block Response Time	71
Table 7: Summary of ΔR^2 Values for the Hierarchical Regression Analysis for Self-attributed Achievement Goals Predicting Response Time.....	72
Table 8: Summary of Hierarchical Regression Analysis for Implicit Achievement Goals Predicting Task Discontinuation.....	73
Table 9: Summary of Hierarchical Regression Analysis for Self-attributed Achievement Goals Predicting Task Discontinuation.....	74
Table 10: Correlations among Word Counts and Implicit Goal Scores.	129
Table 11: Correlations among Self-attributed Goal Scores.	129

List of Figures

Figure 1: 2 x 2 Achievement Goal Matrix.....	13
Figure 2: Targets and Examples of Non-Targets for the d2 Test of Attention.....	58

Chapter 1

Introduction

Over the past two decades, students' reasons for engaging in achievement-related behavior, termed "achievement goals," have become a major focus of many educational psychology researchers (Kaplan & Maehr, 2007). Achievement goals are also considered to represent how one defines successful achievement outcomes (Ames, 1992). The broad category of achievement goals that has been termed *mastery* goals includes striving to learn or improve one's understanding (Ames & Archer, 1988). Similar goals have also been termed *task* (Nicholls, 1984) and *learning* goals (Dweck, 1986). A second broad category has been termed *performance* goals and includes seeking to prove ability to others, specifically in comparison to peers (Dweck, 1986; Ames & Archer, 1988). These have also been labeled *ego* goals (Nicholls, 1984).

Integral to mastery goals is the belief that effort can result in success, whereas performance goals imply that increased effort reveals a lack of ability. Thus, students with mastery goals are more likely to utilize effort-based strategies whereas students with performance goals will quit when faced with a challenging task (Diener & Dweck, 1978). This is because students with mastery goals view failure feedback as reflecting on the difficulty of the task and see the feedback as information supporting their pursuit of success. Additionally, mastery goal students pursue learning and improvement, which requires facing challenges. In contrast, students with performance goals view failure feedback as diagnostic of their inability to complete the task and believe that further attempts would be futile. They also seek to prove their ability and to avoid proving their inability to others. Continuing to work on a task that a performance goal student believes is impossible would only increase the instances of "proving the student's inability."

Approach and avoidance dimensions of motivation (Higgins, 1997) have been integrated into the concepts of performance goals (Elliot & Harackiewicz, 1996) and, more controversially, mastery goals (Elliot & McGregor, 2001). Citing inconsistent findings in the literature regarding the effects of performance goals as well as achievement motivation theory, Elliot and Harackiewicz proposed a three-goal model: mastery goals, performance-approach goals (e.g., proving ability), and performance-avoidance goals (e.g., avoiding proving inability). The authors manipulated participants' goals by providing variations on task instructions. They found that induced performance-approach goals reduced participants' task involvement, dampening their time on task and enjoyment of the task.

Following this work, Elliot proposed and explored the approach/avoidance distinction for mastery goals (Elliot, 1999; Elliot & McGregor, 2001). Examples of mastery-avoidance goals include "striving to avoid misunderstanding or failing to learn course material" and "striving not to miss a free throw in a basketball game" (Elliot & McGregor, 2001, p. 502). Elliot and McGregor mainly relied on psychometric techniques to validate their model, with participants reporting their existing achievement goals along with other personality factors, environmental factors, and performance measures. Mastery-avoidance goals are still relatively unexplored in the literature and thus are neither accepted nor dismissed by the field (Kaplan & Maehr, 2007). In terms of self-attributed achievement goals, the focus of this dissertation will be the most widely accepted achievement goal conceptualizations, mastery and performance goals, with the addition of the approach-avoidance distinction.

Research on achievement goals continues to progress, contributing to motivational models of achievement (e.g., Blackwell, Trzesniewski, & Dweck, 2007) as well as intervention programs (e.g., Meece & Miller, 1999). The wealth of achievement goal literature amassed today

has afforded motivation researchers the opportunity to retrospectively reconsider the assumptions that were made in the early stages of the development of the theory and that have continued to shape the trajectory of the line of inquiry. Specifically, goal research has relied on self-report measures to assess individuals' levels of achievement goals. This choice reflects the underlying assumption that individuals necessarily possess an awareness of the goals they hold and they are willing and able to report them (Kaplan & Maehr, 2007).

The assumption that we hold achievement goals in our conscious awareness has gone relatively unquestioned throughout the course of the development of achievement goal theory. Consideration of the validity of this assumption is essential, especially in light of the beliefs of achievement goal theory forebears. Early motivation researchers reasoned that our needs are internal states that do not require our awareness in order to influence our behavior and, in fact, typically operate without our conscious awareness (McClelland, Atkinson, Clark, & Lowell, 1953; Murray, 1938). This conclusion drove the development of these earlier theorists' motivation research endeavors and measures, just as the assumption of conscious awareness drives achievement goal work today. The present study is the first to introduce the concept of implicit achievement goals. Implicit achievement goal measures may offer a window to goals that are non-conscious and that are therefore less likely to be under our conscious control but that nevertheless influence our behavior.

The purpose of this study was to examine implicit (non-conscious) achievement goals using a classic implicit achievement motivation procedure, the Picture Story Exercise (McClelland et al., 1953), with a coding system developed for implicit achievement goals (Beauchamp, 2007). If implicit achievement goals exist and indeed drive behavior, they should relate to the strength and endurance of effort. Further, the influence of implicit achievement

goals on effort should differ depending upon the extent to which these goals are being met – the extent to which goal-relevant feedback shows improvement (movement towards goal attainment) or decline (movement away from goal attainment). Finally, implicit achievement goals should determine what types of feedback (e.g., self-referenced or norm-referenced) are truly relevant and thus influential. In other words, feedback is relevant when one's non-conscious definition of success (e.g., self-improvement) is aligned with the content of the feedback (e.g., self-referenced feedback) and should influence performance to a greater degree than irrelevant feedback (e.g., norm-referenced feedback).

Whatever influence implicit achievement goals may have on behavior does not preclude the influence of self-attributed (conscious) achievement goals on behavior. The view that implicit and self-attributed achievement goals are distinct but related constructs is akin to that same view that is held by some achievement motivation researchers. Over the past 15 years, the achievement motivation literature (distinct from the achievement goal literature) has begun to reflect a single comprehensive model that recognizes the unique and interacting influences of implicit and self-attributed achievement motivation on performance (Brunstein & Maier, 2005; McClelland, Koestner, & Weinberger, 1989; Spangler, 1992). Likewise, a single comprehensive model predicting achievement outcomes from implicit and self-attributed achievement goals possibly exists. This dissertation offers a first step toward revealing such a model.

Whereas a great deal of research has been conducted to investigate self-attributed achievement goals in various settings and with various outcome measures, this study was the first experiment to explore implicit achievement goals. This investigation was the initial step toward understanding implicit achievement goals and offering a more complete model of achievement goals. The clarification and growth of our knowledge of achievement goals will

help the field progress along its dual purposes of the pursuit of scientific truth and the pursuit of equal opportunities for optimal motivation to learn and achieve.

Specifically, this research addresses the following research questions and hypotheses:

Task Effort

- 1) Are implicit achievement goals related to task effort?

Implicit achievement goals are hypothesized to relate to task effort. As will be discussed in the following literature review, implicit beliefs and motivation influence non-conscious behavior, such as task effort. Implicit achievement goals are considered a subset of implicit motivation and, likewise, influence task effort.

- 2) Does this relationship differ under the various conditions of performance feedback (ascending or descending) and feedback standard of comparison (self or norm)?

Implicit achievement goals are hypothesized to affect task effort in the descending feedback conditions. Specifically, implicit mastery approach goals improve task effort in the descending self-referenced condition whereas implicit performance approach goals improve task effort in the descending norm-referenced condition. However, the avoidance dimensions of these goals may hinder performance under descending feedback conditions.

Evidence of worsening performance is theorized to ignite existing, related motivation, leading to a change in task behavior. Mastery goals are aligned with self-referenced performance evaluations while performance goals are aligned with norm-referenced performance evaluations. In the self-attributed achievement goal literature, the approach dimensions of these goals have fostered performance while the avoidance dimensions have dampened performance.

3) What is the contribution of self-attributed achievement goals to the above models?

Self-attributed achievement goals are hypothesized not to affect task effort. Consciously-held beliefs and motivations, such as self-attributed achievement goals, do not, in and of themselves, influence behaviors that are carried out on a non-conscious level, such as task effort.

Task Discontinuation

1) Are implicit achievement goals related to task discontinuation?

Implicit achievement goals are hypothesized to be unrelated to task discontinuation. In situations requiring conscious thought, such as explicit decision-making, implicit beliefs and motivations are easily overridden by consciously-held beliefs and motivations. Thus, implicit achievement goals do not affect the explicit decision to quit or continue a task.

2) Does this relationship differ under the various conditions of performance feedback (ascending or descending) and feedback standard of comparison (self or norm)?

Implicit achievement goals are hypothesized to be unrelated to task discontinuation regardless of feedback condition. The statements above hold true even under various feedback conditions. Regardless of the degree to which an implicit achievement goal is ignited, its influence does not 'cross over' into conscious-behavior territory.

3) What is the contribution of self-attributed achievement goals to the above models?

Self-attributed achievement goals are hypothesized to affect task discontinuation. The conscious decision whether to quit or continue the task is likely to be influenced by consciously-held achievement motivation goals. Just as with implicit achievement goals and task effort, mastery goals are expected to interact with descending self-referenced feedback while performance goals are expected to interact with descending norm-referenced feedback. Approach

dimensions of these goals should reduce task discontinuation while avoidance dimensions should increase task discontinuation.

Chapter 2

Literature Review

The following literature review begins with the development of achievement goal theory as a derivation of achievement motivation and failure attribution research. The struggles to define goals as situational or personality variables, and to determine the scope of achievement goals (mastery, performance, and others) are described as well as the major outcomes of the more heavily studied achievement goals. One such outcome is achievement. Achievement is described as defined in the achievement motivation literature, specifically the performance and persistence aspects of achievement.

Next, two critical limitations of achievement goal research, inconsistent findings and limited measurement methods, are considered. Although achievement is expected to be a critical outcome of achievement goals, several important works of research have failed to reflect a strong relationship between the two variables and these works are reviewed. Regarding measurement, all of the data on achievement goals have been collected through self-report, predominantly through Likert-type questionnaires. Information on these methods is reviewed as well as the impact of limited measurement methods on achievement goal theory.

Following these criticisms and drawing from motivation, cognitive, and social psychological research, an argument for the inclusion of implicit achievement goals in achievement goal models is presented. Possible implicit achievement goal measures are reviewed and the questions the present implicit achievement goal research project is intended to address are described.

Defining Achievement Goals

Historical Background

The psychological exploration of the internal drives that lead to achievement began with need for achievement, or achievement motivation. In contrast to the then-prevalent view that humans are passive, Henry Murray's research portrayed people as active organisms who nevertheless are heavily influenced by the environment (environmental press; Murray, 1938). In addition to biological needs such as hunger, Murray proposed that humans possess and are driven by numerous non-conscious psychological needs including needs for achievement, power, and affiliation (Murray, 1938). In the following section, need for achievement is described as the precursor to achievement goals, which are then defined. The two major categories of achievement goals, mastery and performance goals, are described along with relevant outcomes. Finally, the more recent development of approach and avoidance dimensions of mastery and performance goals are addressed as well as other types of goals that have been explored in the achievement goal literature.

McClelland, Atkinson and colleagues (1953) built upon the work of Murray by specifically examining non-conscious need for achievement, establishing a theoretical and experimental foundation for the study of this construct. McClelland and colleagues defined achievement motivation as "affect in connection with evaluated performance" (p. 79), and "concern over competition with a standard of excellence" (p. 111). As McClelland and his colleagues found, different contexts can ignite achievement motivation for different outcomes including academic performance but varying widely, from social acceptability (e.g., 1940s American women) to herding sheep (e.g., 1940s Navajo boys; 1953). Across contexts, standards of excellence include winning or doing better than others and doing well according to one's

personal standards. Need for achievement has since been consistently conceptualized in this way (see Brunstein & Maier, 2005).

McClelland and his colleagues (1953) sought to understand need for achievement and included all definitions of excellence under one broad classification. However, as understanding of achievement motivation developed, it became clear that different definitions of excellence are related to different emotions, cognitions, behaviors, and performance outcomes (Nicholls, Patashick, Cheung, Thorkildsen, & Lauer, 1989). These definitions of excellence, or reasons for engaging in achievement-related behavior, are termed *achievement goals* (Ames, 1992) and typically include *mastery goals* and *performance goals* (Ames & Archer, 1988).

Mastery Goals

Mastery goals, also termed task-orientation (Nicholls, 1984) or learning goals (Dweck, 1986), are generally viewed as striving to learn or improve one's understanding or skills (Ames, 1992; Ames & Archer, 1988). Thus, rather than relying on existing ability, mastery oriented students rely on effort to improve ability. This is especially true when faced with a challenge or failure feedback (Diener & Dweck, 1978). Students with mastery goals are able to respond to failure with increased effort because they view failure as resulting from a mismatch between their strategies or effort and the requirements of the task rather than as resulting from inability.

When people pursue mastery goals, they are more likely to experience positive outcomes than when they do not pursue these goals (see Kaplan & Maehr, 2007, for a review). These positive outcomes include affective outcomes such as coping and feelings about school (Elliott & Dweck, 1988; Roeser, Midgley, & Urdan, 1996), and attitudes about cooperation (Kaplan, 2004; Levy, Kaplan, & Patrick, 2004). Positive learning-related outcomes have included persistence (Elliot, McGregor, & Gable, 1999; Elliott & Dweck, 1988), self-regulation (Graham & Golan,

1991), and transfer (Bereby-Meyer & Kaplan, 2005). However, as will be described subsequently, evidence regarding the relationship between mastery goals and school achievement has been mixed (Harackiewicz, Pintrich, Barron, Elliot, & Thrash, 2002).

Performance Goals

In contrast, students who hold performance, or ego (Nicholls, 1984), goals strive to display their existing ability, often attempting to prove their superior ability in comparison to peers (Ames, 1992; Ames & Archer, 1988; Dweck, 1986; Nicholls, 1984). One aspect of proving one's ability is completing a task with minimal effort, which implies ability. Performance oriented students often prefer to quit rather than persist through a challenge or through failure (Diener & Dweck, 1978). When faced with a challenge, students are unable to complete a task without exerting effort and revealing their inferior ability. When faced with failure, students with performance goals attribute their failure to inability and believe that continued attempts would be futile and would increase the likelihood that their inferior ability will be revealed. Performance goals were initially viewed as leading to maladaptive behavior (Dweck, 1986); however, inconsistent relationships between performance goals and outcomes lead to a finer distinction within performance goals (Elliot, 1997).

Goal Models Incorporating Approach and Avoidance

Mixed results have led achievement goal theorists to explore modifications to the theory in recent years (Elliot & Harackiewicz, 1996; Elliot & McGregor, 2001). Elliot and his colleagues have responded to the mixed findings by improving the specificity of achievement goal dimensions, adding approach and avoidance valence to mastery and performance goals (Higgins, 1997; McClelland et al., 1953). Thus, the 2 X 2 model of achievement goals includes

mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance goals.

In order to establish the approach and avoidance dimensions of performance goals, Elliot and Harackiewicz (1996) provided task instructions that would orient participants towards performance-approach (e.g., trying to prove ability) or towards performance-avoidance (e.g., avoiding proving inability). Performance-avoidance oriented participants were less involved in the task which reduced their time on task (effort) and task enjoyment. Performance-avoidance goals have been shown to be maladaptive (see Kaplan & Maehr, 2007, for a review), predicting negative outcomes including anxiety and self-handicapping (Urdu, Ryan, Anderman, & Gheen, 2002). In contrast, performance-approach goals may be adaptive in some but not all contexts, predicting persistence and positive affect (Elliot, 1999; Harackiewicz, Barron, Tauer, & Elliot, 2002), but also anxiety and poor retention (Midgley, Kaplan, & Middleton, 2001).

Following the strong evidence of an approach/avoidance distinction for performance goals, this distinction was applied to mastery goals. Elliot and McGregor (2001) established the approach and avoidance dimensions of mastery goals using a psychometric approach. Participants in their series of studies responded to questions including whether they have mastery-approach strivings (e.g., trying to understand course material) or mastery-avoidance strivings (e.g., avoiding limited understanding of course material) as well as questions regarding other personality factors, environmental factors, and performance measures. Little evidence has been collected regarding this distinction, but this initial study has suggested that mastery-avoidance goals are positively related to negative outcomes such as test anxiety and worry (Elliot & McGregor, 2001).

Figure 1

2 x 2 Achievement Goal Matrix

		Definition of excellence	
		Mastery	Performance
Valence	Approach	Aiming to learn or improve (e.g., trying to understand course material)	Aiming to prove existing abilities (e.g., trying to display natural talent)
	Avoidance	Aiming to prevent failure to learn or improve (e.g., avoiding limited understanding of course material)	Aiming to hide a lack of ability (e.g., trying to conceal incompetence)

Additional Achievement Goal Definitions

In addition to these main avenues of achievement goal research, some exploration of additional goal definitions has occurred. Early on, Nicholls and his colleagues (Nicholls et al., 1985) pursued evidence of work-avoidance goals. Work-avoidance goals have similar negative outcomes to performance-avoidance goals but students with these goals are motivated to minimize academic effort or engagement. Also similar to performance goals, researchers have investigated extrinsic goals, finding that they are maladaptive (Maehr, 1984; Wolters et al., 1996), as well as social goals such as completing tasks in order to please others (Urduan & Maehr, 1995) or seeking shared achievement (Summers, 2006). Most recently, Flum and Kaplan (2006) proposed expanding the concept of mastery goals by including exploratory goals in the achievement goal model, recognizing the pleasure of inquiry as a motivating force.

Originating from a non-conscious needs perspective, achievement motivation research is now dominated by achievement goal theory, which categorizes specific standards of excellence or reasons for achievement-related behavior. Typically, these categories are mastery and performance goals, each experienced through both approach and avoidance valences. Achievement goal theory continues to evolve with theorists contemplating the true meaning of goals, the appropriate categorization of specific goals, the ways goals interact amongst each other, relationships between goals and other constructs, and the breadth of possible achievement goal definitions. This is a dynamic line of research and arguments can be made for many approaches to achievement goals. For the present dissertation, Elliot's 2 X 2 approach, which includes mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance achievement goals, were adopted for self-attributed and, for comparison purposes, implicit achievement goals.

Predictors and Outcomes of Achievement Goals

Based on a recent PsycINFO keyword search, only 60 articles relating to achievement goals had been published in peer-reviewed journals before 2000. From that year on, more than three times as many such works have been published. Clearly, the popularity of achievement goals as a subject of research has grown immensely. This research has included studies of contexts or environments, induced goals, and individual differences. However, some degree of uncertainty of the strength of the relationship between achievement goals and achievement outcomes persists (Harackiewicz, Pintrich, et al., 2002; Midgley et al., 2001).

Environment and Achievement Goals

Initially, these definitions of excellence were viewed mainly as environmental factors which could be broadly categorized as task-involved or ego-involved (e.g., Nicholls, 1984). If, in

an achievement context, excellence is defined as improving one's existing knowledge or skills, the context is task-involved or mastery oriented. If excellence is defined as good performance in comparison to others, the context is ego-involved or performance oriented. As described below, students' perceptions as well as classroom observations have been used to understand classroom environments through an achievement goal lens.

The role of context in students' adoption of achievement goals continues to interest achievement goal researchers, with the heaviest focus on classroom contexts (as opposed to family, school, or cultural contexts). Often, this is accomplished by comparing students' perceptions of their classrooms to students' achievement goals. For example, Thorkildsen and Nicholls (1998) surveyed 247 boys and 289 girls in 30 fifth-grade classrooms and compared students' predictions of teachers' task (mastery) versus ego (performance) expectations for fictional students of low and high ability. The extent to which students perceived the teacher to have task-oriented expectations for students regardless of ability was positively associated with students' adoption of task oriented goals.

Patrick, Anderman, Ryan, Edelin, and Midgley (2001) collected survey data on students' perceptions of their classrooms and then conducted observations on teachers' communications. They surveyed 223 students in 10 classes regarding perceived mastery and performance goal structures and selected two high-mastery goal and two high-performance goal classrooms for observation. High-mastery goal teachers were observed describing learning as active, requiring student involvement and encouraging effort and student interaction. High-performance goal teachers focused on assessments, grades, and class rank.

Kaplan and Maehr (2007) summarized the work relating school settings and achievement goals using Epstein's (1989) taxonomy of school settings, TARGET (task, authority, recognition,

grouping, evaluation, and time). Mastery tasks are meaningful and challenging whereas performance tasks are evaluation-focused and not matched to ability. Students with the authority to decide the methods for task completion as opposed to following external regulations will have enhanced mastery goals. Private recognition of effort, risk-taking, creativity, etc., will enhance mastery goals while public recognition of mistake-free, easily completed work enhances performance goals. Groups based on interest and diverse strengths will enhance mastery goals whereas groups based on ability or social status that encourage competition between groups will enhance performance goals. Private evaluation of progress, creativity, and mastery promotes mastery goals while public evaluation of task completion and comparison to others promotes performance goals. Finally, mastery goals are more likely to be adopted when timing is flexible versus inflexible, timed tasks.

Achievement Goal Induction

Achievement goal researchers have used their knowledge of the situational factors that influence achievement goal adoption to induce participants' achievement goals. Utman (1997) conducted a meta-analysis of 24 studies (with 43 effect sizes) in which participants were randomly assigned to a mastery or performance goal condition and then performance on a relevant task was measured. Mastery goal conditions consisted of the "suggestion that learning, self-improvement were important and possible" whereas performance goal conditions consisted of the "suggestion that demonstrating high ability was important and possible" (p. 174). The results revealed a moderate effect size with mastery goals being advantageous as compared to performance goals, particularly as task complexity increases and as participant age increases.

Individual Differences and Achievement Goals

Although originally perceived as relying on situational factors, achievement goal theorists recognized the importance of individual difference variables early on. Of particular importance are one's conceptions of ability and effort, one's theory of intelligence, and one's self-concept of one's abilities. These individual differences and their relationships with achievement goals are described below.

Conceptions of ability and effort. Responding to a context by adopting a particular goal also depends on individual difference factors such as the development of distinct conceptions of effort and ability (Nicholls, 1978). Young children believe that higher effort leads to higher ability and the two concepts are poorly differentiated. However, adolescents and adults see that high performance with little effort implies high ability but also that high effort can improve ability. Jagacinski and Nicholls (1984) examined this distinction as it relates to achievement goals.

In a series of three studies, Jagacinski and Nicholls (1984) asked participants to read a scenario and rate the character's competence and improved competence. The scenarios depicted task- or ego-involvement (mastery or performance goals) and high or low effort. In the first of the studies, the character's reason for studying was used to measure mastery or performance goals. In the second study, the purpose of the activity determined goals. In the third study, the character's reason for studying revealed mastery goals while the character's opportunity to study relative to their roommate determined performance goals. In the first and last studies, reasons for lack of effort were given in the low effort conditions. In the studies, characters were described as passing the test, completing 8 out of 10 problems, and earning the same score as the roommate, respectively.

In the first and last studies, Jagacinski and Nicholls (1984) detected a significant interaction such that participants who read about the low effort performance goal characters rated the character as having higher competence than did participants who read about the high effort performance goal characters. Thus, participants showed that effort was inversely related to competence in performance goal scenarios. In the first and second studies, Jagacinski and Nicholls detected main effects for goals and effort but no interaction. Thus, participants who read about mastery goal characters rated the character as having a higher degree of improvement in their competence than did participants who read about performance goal characters. Similarly, participants who read about high effort characters rated the characters' improved competence higher than did participants who read about low effort characters. Thus, both mastery goals and high effort are viewed as independently contributing to improved competence.

Theories of intelligence. An individual difference variable similar to one's conceptions of effort and ability is one's theory of intelligence, which is the extent to which one believes that intelligence is a stable trait versus a quality that can be developed through experience and effort (Dweck & Leggett, 1988). An *entity* theorist believes that intelligence is fixed while an *incremental* theorist believes that intelligence is malleable. Theoretically, people with entity theories are concerned with others' judgments of their intelligence – they tend to have performance goals. Those with incremental theories desire to improve their abilities and thus have mastery goals.

In a study of existing theories of intelligence, Cury, Elliot, Da Fonseca, and Moller (2006) analyzed data from 463 French boys and girls aged 12 to 14. They found that strength of entity theory was positively related to performance-approach and performance-avoidance goals, with small effects. Further, strength of incremental theory was positively related to mastery-

approach and mastery-avoidance goals, also with small effects. In a second study, the authors manipulated the theories of intelligence of 96 French boys and girls aged 13 to 15 through statements and a figure with ‘scientific evidence’ of the stability or malleability of the type of intelligence measured by the experimental task, items from the WISC-III. The findings were similar to the previous study with slightly larger effects.

These patterns found moderate support in a meta-analysis of studies measuring achievement goals with adult populations in non-sport contexts (Payne, Youngcourt, & Beaubien, 2007). With 11 and 12 studies, respectively, the authors found significant but very small positive relationships between entity theories and mastery-approach goals and between incremental theories and performance-approach goals. Only two studies included performance-avoidance goals.

Achievement expectancies. In addition to one’s ability to distinguish between effort and ability and in addition to one’s theory of intelligence, one’s achievement expectations are also related to achievement goal adoption. Whether an achievement goal is defined by ability or by improvement and effort has clear implications as to whether the achievement goal is attainable, as described previously. One’s self-concept in terms of ability can also influence achievement goal adoption. Senko and Harackiewicz (2005) examined how achievement goals change as a result of performance feedback in a classroom and in a laboratory setting. Following poor exam performance in the classroom, Senko and Harackiewicz found that participants tended to reduce their pursuit of mastery and performance-approach goals in favor of performance-avoidance goals. In the laboratory, participants were given feedback regarding their performance on a novel task. They were randomly assigned to receive a score, a score with a statement that their performance was above average, or a score with a statement that their performance was below

average. Mastery goals for participants in the negative feedback condition were reduced compared to initial levels. This study provides one example of the relationship between self-concept and achievement goals.

As Thorkildsen and Nicholls (1998) noted, “educational psychologists coordinate concerns with social systems and individuals’ identities” (p. 182). As evidenced by the subsequent description of achievement goal approaches, achievement goal theory is a perfect example of educational psychologists’ use of multiple approaches to address a single process. However, one approach to achievement goals has been ignored in empirical work: the contribution of non-conscious goals to motivational models of achievement (but see Elliot & Church, 1997; and Kaplan & Maehr, 2007). The purpose of this dissertation is to bring the non-conscious perspective to bear on achievement goal theory.

Achievement as an Outcome of Achievement Goals

By definition, the key outcome that achievement motivation constructs are expected to predict is achievement. Theoretically, mastery-approach goals should be adaptive, performance-approach should be adaptive in some settings, and mastery- and performance-avoidance goals should be maladaptive (Kaplan & Maehr, 2007). However, some studies, including one of the more pivotal achievement goal works as well as research that has been designed to investigate this link, have failed to provide evidence supporting the relationship between achievement goals and achievement. For example, in one of three studies establishing the 2 X 2 achievement goal framework, Elliot and McGregor (2001) collected self-attributed achievement goal and performance data on 182 undergraduates. Of the four self-attributed achievement goals measured, only performance avoidance goals significantly predicted performance as expected on the three course exams, explaining a small amount of the variance in performance.

The relationships among achievement goals, goal setting, focus, and performance was the main research question for Lee, Sheldon, and Turban (2003). They found that any relationships between undergraduates' self-attributed achievement goals and course grades were mediated through self-reported expected mental focus and participants' course grade goals, both of which were minimally related to performance. The relationships between self-attributed achievement goals and these mediators were likewise small. Performance approach goals were slightly positively related to self-reported expected mental focus and course grade goals. Performance avoidance goals were slightly negatively related to self-reported expected mental focus and course grade goals. Mastery goals were slightly positively related to self-reported expected mental focus and were unrelated to course grade goals.

In a study of self-attributed achievement goals and junior high math students, Wolters (2004) found that performance approach goals were slightly positively related to course grades after controlling for prior achievement and gender, and including classroom goal structure and self-efficacy in the model, whereas mastery and performance avoidance goals were unrelated to course grades. Wolters also reported significant relationships between self-attributed achievement goals and self-reported engagement and learning strategies, but the magnitudes of these relations may be inflated due to the overlap in measurement error resulting from measuring several similar constructs through the same Likert-type self-report method.

Recently, Payne and colleagues (2007) conducted a meta-analysis of 141 studies with 178 independent samples investigating self-attributed achievement goals of adults in educational and occupational settings. Self-attributed achievement goals were minimally related to performance outcomes. Trait mastery goals were positively related to learning, academic performance, task performance, and job performance, but only minimally. State mastery goals

were positively related to learning and job performance. Trait performance approach goals were minimally positively related to job performance. State performance approach goals were positively related to task performance. Trait performance avoidance goals were negatively related to learning, academic performance, and task performance, but also only minimally. Thus, when effects for achievement goals are detected, effect sizes are often minimal to small.

Persistence and Effort as Outcomes of Achievement Goals

As described previously, mastery-oriented students tend to persist in the face of challenge, even increasing effort as a response to failure while performance-oriented students aim to succeed with a minimal amount of effort expended and will quit when a task is challenging or when they receive failure feedback (Dweck, 1986). As described below, these relationships have been supported in the literature through studies using self-report of hypothetical or predicted effort responses, subjective self-reports of effort, and measures of effort behavior.

Hypothetical and predicted effort. In a study of 92 adults, Grant and Dweck (2003) asked participants to complete a self-report measure on their achievement goals (learning-mastery, outcome-performance, ability-performance, and normative-performance). Participants also read failure scenarios and answered questions regarding their likely responses if the scenario happened to them. Participants' reports that they would devote less time and energy to the class were negatively associated with their endorsements of learning-mastery goals and positively associated with their endorsements of ability-performance goals.

Similar relationships were found when Lee and colleagues (2003) measured 284 undergraduate students' self-attributed achievement goals as well as their expected levels of ability to concentrate when studying for an upcoming exam, "mental focus". Mastery and

performance-approach goals were positively related to mental focus while performance-avoidance was negatively related to mental focus. Wolters (2004) also compared self-attributed achievement goals to predictions of one's own behavior by asking 525 junior high school math students to predict the likelihood that they will take math in the future – that they will persist in math when given the choice. Students' mastery goals were positively associated with predicted persistence while performance-avoidance was negatively associated with this outcome.

Subjective self-report of effort. Wolters (2004) also measured participants' self-report of actual effort in math class and persistence through boredom, distractions, or difficulty. Mastery orientation improved both effort and persistence while performance-avoidance goals hampered persistence. Elliot and colleagues (1999) asked very similar effort and persistence questions of 179 undergraduates, regarding an upcoming exam. They found that both mastery goals and performance-approach goals were positively related to effort and persistence.

Achievement goals and self-reported effort has also been examined through experimental manipulation of goals and a laboratory task (Elliot & Harackiewicz, 1996). In two studies, the authors presented 84 and 92 undergraduates, respectively, with a word puzzle accompanied by instructions reflecting various achievement goals depending on condition. Following the task, they asked participants to report their level of concentration on the puzzle (task involvement) and the amount of effort they expended in solving the puzzle. Effort expenditure was unrelated to achievement goal condition in both studies. However, participants in the performance-avoidance condition were less task-involved than were those in the mastery condition for both studies. In the second study, participants in the performance-avoidance condition were also less task-involved than were those in the performance-approach condition.

Objective measures of effort. Experimental conditions have also been used to measure likelihood of persistence. Barron and Harackiewicz (2001) measured the achievement goals of 166 undergraduates and their desire to learn more about math techniques (persistence) after learning about and practicing a new math technique. However, the authors also manipulated the level of difficulty of the practice items (equal difficulty to the training or higher difficulty than the training). They found that regardless of the difficulty of the items, the likelihood that participants would want to persist in learning new math techniques increased with mastery goal levels.

Student reports of actual effort expended, as measured by hours spent studying for a particular exam during the weekend before the exam, were investigated in a longitudinal study conducted by McGregor and Elliot (2002). The achievement goals of 177 undergraduates were measured at the beginning of the semester and effort was measured just days before the relevant exam. The authors found that both mastery goals and performance-approach goals were positively related to effort while performance-avoidance goals were negatively related to effort.

The consistency of and reasons for the above-described relationship between achievement goals and persistence were examined through a meta-analysis of 23 studies in which mastery and performance goals were experimentally manipulated and free-choice persistence was measured (Rawsthorne & Elliot, 1999). The results of this meta-analysis showed that mastery goal conditions resulted in greater persistence than performance goal conditions. This relationship was true for studies in which participants received positive feedback towards the end of the trial before presented with a choice and also for studies in which the performance condition reflected a performance-avoidance orientation. However, the relationship was not true

when participants did not receive positive end-of-task feedback or the performance condition was performance-approach.

The literature has provided evidence of relationships between self-attributed achievement goals and some performance outcomes. Thus, self-attributed achievement goals are clearly part of the achievement process. However, the magnitudes of these relationships are often small or moderate at best. For this reason, the need to identify additional contributing factors remains. One such overlooked factor may be non-conscious, or implicit, achievement goals, which are the focus of this dissertation.

Operationalizing Achievement

Defining achievement can be an unending task requiring the contemplation of questions both philosophical (what types of achievement should a society value?) and pragmatic (which achievement outcomes have real-world consequences?). McClelland and colleagues (1953) considered achievement to be surpassing standards of excellence and relied on cultural influences to determine the definition of the standard (the Navajo may associate achievement with successful sheep herding, for an example from McClelland et al., 1953). Fifty years later, Elliot and Dweck (2005) issued a call to redefine the achievement motivation literature by replacing the concept of achievement with that of competence due to the poor conceptualization of achievement across empirical works. In this section, the “achievement” in achievement motivation will be considered in light of achievement goal research, implicit need for achievement research, and the present dissertation.

Achievement in Achievement Goal Research

Citing two dictionaries, Elliot and Dweck defined competence as “a condition or quality of effectiveness, ability, sufficiency, or success” (2005, p. 5). In contrast to Elliot and Dweck’s

recommendation, much of achievement goal research has centered on means to success, the utilization of effort and ability, rather than the ends, achieving competence. For example, the purpose of the developmental work of John Nicholls (1984) was to show that when ability and effort are undifferentiated (i.e., high ability results from effort), a person is task-involved and seeks to develop skills. Conversely, when the two are differentiated (i.e., ability is fixed; success with little effort implies high ability), a person is ego-involved and seeks to demonstrate a higher innate ability than other people. Similarly, Carol Dweck (e.g., Dweck & Elliott, 1983) extended the existing literature relating achievement motivation to the attribution of outcomes to either effort or ability (Weiner, 1972). Previous work had predicted failure attributions from achievement motivation levels and Dweck investigated maladaptive failure attributions (i.e., due to insufficient ability rather than insufficient effort) through performance goals. The focus of this early work was relating achievement goals to effort and ability as the means to success. As these examples illustrate, achievement goal theory has centered on achievement: “Something accomplished successfully, especially by means of exertion, skill, practice, or perseverance” (achievement, 2004), with particular interest in the means of achievement.

Achievement in Implicit Need for Achievement Research

The implicit need for achievement literature has focused on effort as an end in itself. According to hypotheses presented by McClelland and colleagues (1989), motivation affects behavior by energizing and sustaining operant (spontaneous) behavior and by directing respondent (immediate conscious choice) behavior. Operant behavior may be viewed as effort exertion when a task presents itself. Respondent behavior may be viewed as effort exertion when given a clear choice, or persistence. In the case of need for achievement, the effects on behavior include frequency of striving to meet standards over time or without direct prompting (operant,

effort) and responding to a choice to engage in an attempt to meet a standard or not (respondent, persistence).

In a study of need for achievement, Brunstein and Maier (2005) operationalized effort and persistence in a controlled laboratory setting by measuring performance on a mental concentration task. This type of task is useful because it minimizes the influence of prior skill level in two ways. First, mental concentration tasks tend to require little prior knowledge or skill. Second, any preexisting ability can be partialled out based on practice runs.

Brunstein and Maier (2005) measured effort by measuring the speed of responses to the mental concentration task (task performance). The authors reasoned that, considering the mental concentration task did not reflect ability, speed of response mainly reflected the effort applied to the task. The authors measured persistence by following several repetitions of the task with an explicit choice whether to continue with the task or to complete a different type of task (task continuation). Whereas Brunstein and Maier operationalized effort and persistence in this way to study implicit and self-attributed need for achievement, the purpose of this dissertation is to examine implicit and self-attributed achievement goals via effort and persistence and identical operationalizations will be utilized.

Achievement is succeeding – meeting a standard of excellence. Achieving often requires utilizing effort and ability and persisting even when persistence is not required or expected. Depending on one's values and practical needs, true achievement outcomes vary widely. Further, the likelihood of attaining achievement outcomes frequently depends on existing abilities. Thus, the components of achievement that are consistent across values and practical needs and across existing ability levels are the application of effort and persistence. In many instances, especially in areas of applied psychology, achievement is best operationalized through real-world outcomes

such as work output. When advancing theory and testing hypotheses intended for generalization across endeavors, effort and persistence are suitable outcomes for reflecting achievement and were dependent variables of interest for the present dissertation.

Measuring Achievement Goals

Since the inception of achievement goal theory in the early 1980s, a number of achievement goal measures have been developed. Although achievement goal researchers have been prolific creators of instruments, there is relatively little variety in the final products of these endeavors. Regardless of how measures have been developed or whether measurement techniques are quantitative or qualitative, data on students' experiences with achievement goals have been mediated through self perceptions or interpretations of outside observers (see Kaplan & Maehr, 2007, for a review).

Qualitative Measurement of Achievement Goals

Nicholls and his colleagues' qualitative work was greatly responsible for revealing the existence of achievement goals and others' qualitative work has been largely responsible for identifying achievement goals other than mastery and performance (Kaplan & Maehr, 2007). Much of the qualitative work has ranged from in-depth longitudinal observations and conversations (Nicholls & Hazzard, 1993) to semi-structured interviews at a single time point (Levy et al., 2004).

In the early 1990s, Nicholls joined forces with a practicing teacher, Susan Hazzard, to document a year in a second grade classroom (Nicholls & Hazzard, 1993). For the first three weeks of the school year and then selectively for the remainder of the year, Nicholls observed the classroom Hazzard taught and the two discussed classroom occurrences and themes in depth. This collaboration allowed Nicholls and Hazzard to record aspects of teaching, learning and

motivation in a natural setting. The authors described students' preoccupation with the notion of competence from the first day of school. For example, Peter is sure of his drawing ability and pushes for his work to be displayed while his less competent peers shy away. The authors also documented students' transition from performance goals to mastery goals. In the spring, Hazzard engaged the students in a discussion about a timed math quiz they had taken. After students focused on their envy of Peter's success and possible bragging, Hazzard asked how it might feel to be the one who always got everything right quickly. The students' discussion helped Peter realize that being wrong is necessary in order to learn and that the purpose of schooling is to learn rather than simply to show one's abilities. Nicholls and Hazzard's work is one of the most extensive examples of the qualitative study of schooling including achievement goals.

In a study of Jewish Israeli fifth-graders, Levy and colleagues (2004) conducted a more targeted qualitative examination of achievement goals. The authors interviewed the 50 students who scored in the top 10% of achievement goals, preference for collaboration, and stereotypes. Students were interviewed about their subjects, feelings of competence, and feelings towards school in order to gain information about their achievement goals. Blind content coding was used to re-categorize participants according to achievement goals. During their interview, mastery oriented students seemed relatively unconcerned with social status and preferred cooperation with friends. Performance oriented students seemed preoccupied with social status and generally preferred to cooperate with high-status students. The one exception was low-status performance-avoidance oriented students who preferred to cooperate with low-status in-group members. This study was able to reveal intricacies in the relationships among achievement goals, social status, and cooperation that may have been overlooked if survey methodology and statistical analyses were relied on exclusively.

Recently, Urdan and Mestas (2006) combined methodologies by presenting participants with one Likert-type performance goal item at a time, each followed by a one-on-one interview regarding participants' reasons for pursuing a given performance goal. Content analysis revealed four categories of reasons behind performance goals: appearance-approach, appearance-avoidance, competition-approach, and competition-avoidance. Although much of the qualitative work has succeeded in increasing the breadth or depth of our knowledge of achievement goals, the work is still limited by the accuracy of the participants' self-perceptions and of observers' judgments.

Quantitative Measurement of Achievement Goals

Quantitative measures of achievement goals have tended to consist of statements accompanied by Likert-type response options. Based on the research experience of Nicholls and his colleagues, Nicholls and colleagues (1985) created a survey based on possible beliefs about school. Others interviewed students or surveyed them using open-response items in order to develop items for their scales (Elliot & Church, 1997; Midgley et al., 1998; Miller, Behrens, Greene, & Newman, 1993). Although self-report instruments of these sorts can serve their purposes in research, there may be an over-reliance on self-report instruments without extensive theoretical consideration of the implications of their use (Kaplan & Maehr, 2007). For example, Elliot has built on his measure by adding the mastery-avoidance subscale based on an argument that mastery-avoidance is a logical extension of the existing goal theory (Elliot & McGregor, 2001). Much of the establishment of this scale has consisted of investigation of its psychometric properties – internal consistency and factor structure (e.g., Finney, Pieper, & Barron, 2004). These are important aspects of quantitative measures but concerns about the construct validity of the scale remain.

Descriptions of achievement goal measures. Generally, achievement goal scales measure mastery and performance goals. For example, Button, Mathieu, and Zajac (1996) created a scale measuring learning (mastery; “I prefer to work on tasks that force me to learn new things.”) and performance (“I feel smart when I do something without making any mistakes.”) goals intended for college students and working adults. Achievement goal scales frequently include other goals. For example, a scale developed by Nicholls and colleagues (1985) measures task (mastery; “I feel most successful if something I learned really makes sense.”) and ego (performance; “I feel most successful if I show people I’m smart.”) goals. This scale also measures social (“I feel most successful if I work with friends.”) and work-avoidance (“I feel most successful if I get out of work.”) goals. This scale was developed using a sample of high school students.

Many other scales include approach/avoidance distinctions for performance goals. For example, Skaalvik (1997) created a scale measuring mastery (“At school it is important for me to learn something new.”), self-enhancing ego (performance-approach; “I always try to do better than other students in my class.”), self-defeating ego (performance-avoidance; “At school it is always important for me to avoid looking stupid.”), and avoidance (work avoidance; “At school I try to get away with doing as little as possible.”). This scale was validated using middle school students.

The Patterns of Adaptive Learning Survey (Midgley et al., 1998) created a similar measure intended for elementary and middle school students. The Patterns of Adaptive Learning Survey measures task (mastery; “An important reason I do my work is because I like to learn new things.”), ability-approach (performance-approach; “I want to do better than other students in my math class.”), ability-avoidance (performance-avoidance; “One of my main goals in math

is to avoid looking like I can't do my work."), and extrinsic ("The main reason I do my work is because we get grades.").

A measure that has gone through several iterations and now reflects the 2 X 2 model of achievement goals was created by Elliot and his colleagues (Elliot & Church, 1997; Elliot & McGregor, 2001; slightly modified for Cury et al., 2006). This scale has been validated mainly for college student populations. The scale measures mastery-approach ("It is important for me to understand the content of this course as thoroughly as possible."), performance-approach ("It is important for me to do better than other students."), and performance-avoidance ("I just want to avoid doing poorly in this class.") goals. The newer versions of this scale also measure mastery-avoidance ("My goal is to avoid learning less than I possibly could.").

Comparisons among achievement goal measures. As could be expected, the large number of easily implemented achievement goal surveys has led to attempts at clarifying the distinctions among the scales. Using a sample of college students, Jagacinski and Duda (2001) compared mastery and performance goal scales from the Patterns of Adaptive Learning Survey (Midgley, Arunkumar, & Urdan, 1996), the Motivation Orientation Scales (Nicholls et al., 1985), and Goal Orientations Scales (Button et al., 1996). Consistent with achievement goal theory, mastery and performance goal scales were positively related within the Motivation Orientation Scales and within the Goal Orientation Scales; however, they were unrelated within the Patterns of Adaptive Learning Survey. Across scales, relationships among performance goal scales ranged from moderate to strong. Relationships among mastery goal scales were moderate. Thus, these scales are generally measuring similar constructs.

Jagacinski and Duda (2001) also compared these scales to theoretically related measures, most importantly the Theories of Intelligence (Dweck & Henderson, 1988, as cited in Jagacinski

& Duda, 2001) scale, which measures the extent to which one believes that intelligence is unchangeable (entity) or that intelligence is malleable through effort (incremental). As would be expected, Theories of Intelligence was negatively related to mastery goals as assessed by the Motivation Orientation Scales such that higher mastery goals were associated with more incremental theories of intelligence. However, the magnitude of this relationship is very small. Further, Theories of Intelligence was unrelated to all other goal scales. Thus, whereas achievement goal measures are interrelated, they are essentially unrelated to a measure that has been theorized to be one of the foundations of achievement goal adoption.

Smith, Duda, Allen, and Hall (2002) conducted similar work focusing on measures developed by Skaalvik (1997), Elliot and Church (1997), and the Patterns of Adaptive Learning Survey. For this study, the authors investigated mastery, performance-approach, and performance-avoidance scales. Through confirmatory factor analyses and a multi-trait-multi-method correlation analysis, Smith and colleagues provided evidence that the scales converge across measures. However, they also revealed evidence that the whole set of performance-avoidance items was comprised of three factors: impression management, fear of failure, and avoiding demonstrating low ability. Once again, research has confirmed that participants' answers to questions at one time point are related to their answers to similar questions at that same time point, which is to be expected. Further, this study highlights the lack of clarity regarding the achievement goal dimensions. Specifically, performance-avoidance items have been written to reflect multiple dimensions although these dimensions are not specified by achievement goal theorists.

In summary, as achievement goal theory has gained a certain amount of popularity among educational psychologists, numerous measures and methods for investigating

achievement goals have been developed. These measures have been developed without consideration either of the best measurement method or of the implications of the measurement methods chosen. At the same time, the similarities and differences among the methods are relatively superficial, as they all rely on some form of self-report and thus psychometric investigations are incomplete sources of validity evidence. Comparisons among measures have revealed moderate consistency with achievement goal theory but also areas that call for considerable improvement. Thus, existing self-attributed achievement goal measures should be used only after careful consideration of the influence of measurement selection on interpretation of results.

Support for Implicit and Self-Attributed Achievement Goals

In an extensive review of the achievement goal literature, Kaplan and Maehr (2007) observed that the overabundance of self-report research in the achievement goal literature reflects a theoretical perspective that may be intentional for some researchers but incidental to others. Using self-report achievement goal scales assumes “that people can access, think about, and express their motives” (p. 155). As an example of contrast, the authors cited McClelland’s use of the Picture Story Exercise as a deliberate extension of the theoretical perspective that motivation is an unconscious process. However, McClelland and his colleagues have broadened their view of motivation to one including unconscious processes, which can be tapped by the Picture Story Exercise, and conscious processes, which can be tapped by self-report instruments. Although achievement motivation theory has evolved to explain findings resulting from both implicit and self-report instruments, achievement goal theory has not moved beyond findings within the single self-report dimension.

Several areas of inquiry suggest that a good deal of psychological functioning can occur at various levels of awareness or perceived control. Further, when psychological functioning occurs without our awareness, it can lead to different outcomes than when those same functions occur with our awareness. Evidence of automatic and controlled versions of given processes exist regarding the major facets of achievement goals: achievement motivation; self-concept and attitudes; judgment and decision-making; and goal pursuit including problem solving.

Implicit and Self-attributed Achievement Motivation

Between the late 1940s, when McClelland and his colleagues introduced achievement motivation theory, and the late 1980s, the body of achievement motivation work grew immensely. During this time, researchers often used implicit measures or self-attributed measures interchangeably (McClelland et al., 1989). However, as described previously, achievement motivation was originally theorized as a need that drove behavior without one's awareness (McClelland et al., 1953). At that time, McClelland and his colleagues provided evidence that the implicit and self-attributed achievement motivation did not correspond. Eventually, Spangler drew from both of these lines of research and reported a meta-analysis that confirmed the original findings by McClelland et al. (1953) – implicit and self-attributed achievement motivation are minimally related (Spangler, 1992).

McClelland's hypotheses. Shortly before Spangler's (1992) finding was published, McClelland and his colleagues (1989) reviewed the same lines of research and attempted to create a theoretical understanding uniting implicit and self-attributed achievement motivation in the same model. These authors as well as Shultheiss and Pang (2007) posited that implicit achievement motivation energizes action, is engaged through incentives intrinsic to a task and nonverbal cues, and is defined by one's own standards. In contrast, self-attributed achievement

motivation directs overt choices, is engaged through social-extrinsic incentives and verbal cues, and is defined by social norms and expectations.

McClelland and his colleagues (1989) concluded that implicit motives arise from activity-based incentives or feedback and do not require abstract language capacities. Implicit achievement motivation is deeply rooted in early-life experiences and consists of preferences or tendencies that emerge when situations or tasks are reminiscent of past experiences that were pleasurable and thus influence non-conscious motivation for effort and choice behaviors. Thus, implicit motives can predict long-term spontaneous trends such as entrepreneurial success because these long-term outcomes require consistency in effort and choices even when the opportunity to be effortful or to make a choice is not made explicit. In classrooms, implicit achievement motivation likely relates to behaviors that students exhibit when they have not been directly instructed by their teachers such as the achievement level of the peer groups they join or the roles they take in group activities.

Self-attributed motives are based on social norms or cultural expectations and require individuals to hold linguistic representations of such concepts (McClelland et al., 1989). These motives are part of our self-concept, which is informed by others' behaviors towards us. Self-attributed motives can predict situation-specific behaviors and explicit choices and respond to explicit incentives or feedback determined by other individuals or groups. For example, a student may behave in a highly motivated manner with one teacher due to the classroom norms, expectations, and incentives that teacher has implemented while that same student may be uninterested in the same subject in another teacher's classroom. Self-attributed achievement motivation might also influence the courses in which a given student enrolls, for example. This explicit choice is an instance in which our conscious beliefs about ourselves (e.g., whether our

self-concept fits our concept of a “hard-worker-type”) can override our implicit achievement motivation (e.g., whether we truly enjoy the challenge of neurochemistry).

A meta-analytic test of McClelland’s hypotheses. Although McClelland and his colleagues (1989) supported these assertions with numerous findings from existing literature, they did not test their hypotheses. Shortly thereafter, Spangler (1992) conducted a meta-analysis of 105 achievement motivation studies to test McClelland and colleagues’ hypotheses regarding the distinctions between implicit and self-attributed achievement motivation. Across measures and outcomes, relationships were significant but modest. However, based on the data, Spangler predicted that implicit achievement motivation improves outcomes when several task-intrinsic incentives are present. In contrast, self-attributed achievement motivation improves outcomes when several social incentives are present. Thus, Spangler concluded that the meta-analysis using existing literature supported McClelland and colleagues’ hypotheses and that neither implicit nor self-report measures are sufficient alone.

An experimental test of McClelland’s hypotheses. Most recently, Brunstein and Maier (2005) conducted three experiments with the explicit purpose of testing McClelland and colleagues’ (1989) hypotheses. In all three experiments, participants completed the Picture Story Exercise and a measure of self-attributed achievement motivation. The experimental task was a mental concentration task conducted via computers. Experimental conditions varied based on self- and norm-referenced feedback between test blocks that independently improved or declined over the test blocks. Dependent measures included test reaction time (effort) and the decision whether to quit or continue when given the option after 8 blocks (persistence). In the first experiment, participants were given task-intrinsic instructions. Instructions in the second

experiment were ego- and norm-based, or social-extrinsic. The third experiment essentially combined the first two experiments.

When participants were task-oriented, the only relationship between implicit or self-attributed need for achievement and effort occurred when participants were subject to descending self-referenced feedback. In this condition, higher implicit need for achievement was related to increased effort. The only relationship between implicit or self-attributed need for achievement and persistence occurred when participants received descending norm-referenced feedback. In this condition, higher self-attributed need for achievement was related to increased likelihood of persistence.

When participants were ego-oriented, effort was generally similar regardless of implicit or self-attributed need for achievement and regardless of feedback conditions. However, one group of participants significantly outperformed other participants in terms of effort: those who were high in implicit need for achievement, high in self-attributed need for achievement, and who received descending norm-referenced feedback. Persistence was only related to self-attributed need for achievement, and this positive relationship was only true for those receiving ascending norm-referenced feedback.

Based on the results of these studies, Brunstein and Maier (2005) concluded that implicit achievement motivation responds to task-intrinsic incentives and self-referenced feedback and stimulates instrumental behaviors. In contrast, self-attributed achievement motivation responds to norm-reference feedback differently depending on the type of incentive, and informs decision-making. Additionally, these two types of achievement motivation interact to predict instrumental behaviors in situations with ego-based incentives and norm-referenced feedback. Thus, Brunstein and Maier provided support for McClelland and colleagues' (1989) hypotheses regarding the

distinction between implicit and self-attributed achievement motivation through empirical tests and also demonstrated the interactive effects of implicit and self-attributed achievement motives under certain conditions.

The research reviewed thus far clearly established that a distinction can be made between implicit and self-attributed achievement motivation but has not been extended to achievement goals. Achievement motivation as was defined and operationalized in these earlier studies is a general need for a feeling of competence; in contrast, achievement goals encompass achievement motivation as well as attitudes about specific standards of excellence. Additionally, responses to achievement goal self-report items necessarily reflect aspects of one's self-concept. Social psychologists have found that both attitudes and self-concept have implicit and explicit modes of operation (Greenwald & Banaji, 1995) thus providing some preliminary support for the measurement of achievement goals via implicit methods.

Implicit Attitudes toward Others, Oneself, and End States

Greenwald and Banaji (1995) reviewed social psychological literature on implicit attitudes, including attitudes toward oneself. They defined an implicit attitude as “an existing attitude projected onto a novel object” (p. 5) and argued that arousal of implicit attitudes is too quick for conscious control and can be induced by stimuli that are presented too unobtrusively for awareness. In support of this argument, implicit and explicit attitudes, specifically White prejudice against Blacks, have recently been shown to be distinct but related constructs. For example, Dovidio, Kawakami, and Gaertner (2002) measured White participants' implicit and self-attributed prejudice against Blacks and instructed them to engage in two conversations with confederates: one White and one Black. Self-attributed racial attitudes were related to differences in verbal behaviors toward Black versus White confederates whereas implicit racial attitudes

were related to differences in nonverbal behaviors. Thus, attitudes, a component of achievement goals, have implicit and explicit processing capacities.

Whereas these lines of research suggest that implicit measures are needed to adequately capture positive and negative attitudes toward people or objects, achievement goals are comprised of attitudes toward end states. In a series of studies investigating implicit and self-attributed attitudes toward end states such as ‘thinness,’ Ferguson (2007) found that implicit attitudes toward end states predict goal-directed behavior better than either self-attributed attitudes toward end states or implicit attitudes toward objects of goal pursuit such as cookies. Additionally, implicit attitudes toward end states (equality) was related to subtle goal pursuit (continuation of Medicare) whereas self-attributed attitudes toward objects of goal pursuit (elderly) were related to overt goal pursuit (non-stereotypic judgment of elderly). These results show that implicit goals promote specific goal-directed behavior, even when those goals are outside of awareness. Additional lines of research reveal the mechanisms by which goals are pursued without the awareness of the pursuer.

Non-conscious Thought and End State Judgment, Problem Solving, and Goal Pursuit

One aspect of goal pursuit is judging whether targets are met. Through a series of five experiments, Dijksterhuis (2004) demonstrated the superiority of non-conscious thought over conscious thought and brief thought in making judgments. With a task of judging the suitability of apartments or roommates, the participants who were distracted for a few minutes, and thus had to rely on unconscious thought, before deciding were more likely to choose the objectively more attractive option than those in other conditions. Dijksterhuis provided evidence that their judgments were based on a better memory representation of their options. Logically, the memory

representation must have improved during the distraction as perceptions were more polarized and better integrated for those who were distracted as compared to others.

Processing without awareness may also help problem-solvers (a subset of goal-seekers) to overcome obstacles. Incubation is a non-conscious part of problem solving when a challenging problem is put aside for a time, somehow improving problem solving during the next attempt. Smith and Blankenship (1991) conducted several studies revealing the positive effects of incubation on problem solving following a false start. Participants were in fixation conditions, in which participants were misdirected by a red herring, or in a non-fixation condition. Incubation, during which distraction tasks were performed, improved problem solving for all, but improvement was greater in the fixation condition. Thus, non-conscious thought improves problem solving especially in the face of obstacles.

To this point, it has been established that implicit and self-attributed motivation and attitudes toward others, the self, and end states are distinct and are predictive of behavior. Further, it is clear that non-conscious thought can influence and support goal-directed behavior. However, this information does not necessarily mean that goals can be attained completely without awareness. Bargh and Ferguson (2000) reviewed the literature that provided evidence along this vein.

Bargh and Ferguson (2000) argued that social interaction, evaluation and judgment, and the pursuit of goals can all occur without conscious acts. In the studies cited in this work, researchers induced non-conscious goals through priming or environmental triggers. Such induction led to behaviors or responses that were consistent with expected goal pursuits. Whereas these findings do not speak to how existing implicit goals influence behavior, they do show that once a goal is induced, goal pursuit can occur without awareness of the goal, the

induction event, or the reasons for the goal pursuit behaviors. Thus, one may pursue a goal without having the capacity to report having or pursuing that very goal.

In summary, the limiting effects of restricting achievement goal measurement to self-report instruments have recently been highlighted. Continuing on this path will only serve to narrow the theoretical perspective of this body of work. Evidence exists supporting the implicit and self-attributed natures of achievement motivation, self-concept, and attitudes. Regarding goals specifically, implicit and self-attributed attitudes toward end-states are distinct but related. Whereas individuals might hold goals of which they are unaware, they also do not need awareness in order to evaluate outcomes, overcome obstacles, and carry out goal pursuit. Thus, achievement motivation that is defined at the level of achievement goals, including attitudes about specific outcomes and about the self, is likely to possess implicit and self-attributed factors that both influence various aspects of goal pursuit. The need for achievement literature has evolved from competing theories of implicit versus self-attributed needs to inclusion of implicit and self-attributed need for achievement, improving the predictive power of the model. However, this work has not been extended to studies grounded in achievement goal theory. The purpose of this dissertation was to explore the potential of achievement goal theory beyond, but also in concert with, findings based on self-attributed achievement goals.

Measuring Implicit Achievement Goals

In the original achievement motivation work, McClelland and colleagues (1953) used the Picture Story Exercise, a version of Murray's Thematic Apperception Test (Murray, 1938). This method required participants to create structured stories regarding a picture stimulus. The use of this implicit measure reflected the recognition that our motives may not be apparent to ourselves via introspection or to others via observation. Some researchers investigating motives such as

achievement, power, affiliation, and intimacy are continuing to use implicit measures like the Picture Story Exercise (Schultheiss & Pang, 2007). Those using the Picture Story Exercise to investigate achievement motive use various definitions of standards of excellence as indicators of achievement imagery. It seems reasonable to suggest that researchers investigating achievement goals might simply code these different definitions of standards of excellence separately in order to measure implicit achievement goals. Doing so would yield results distinct from those produced using a self-report measure of achievement goals. For a clear comparison with self-attributed achievement goal theory, these individual standards of excellence can be organized into the mastery/performance and approach/avoidance categories.

The Picture Story Exercise is not the only measure of implicit achievement motivation. For example, McClelland and Liberman (1949) related implicit achievement motivation as assessed by the Picture Story Exercise to speed of recognition of neutral, security, and achievement words that were presented first dimly and then with increasing brightness. Participants with high implicit achievement motivation recognized positively valenced achievement words more quickly than did those with low implicit achievement motivation. In addition to this measure, social psychology has developed numerous routes to measuring attitudes implicitly (Wittenbrink & Schwarz, 2007). These methods include response competition procedures such as the Implicit Association Test (Greenwald, McGhee, & Schwartz, 1998), pencil-and-paper measures such as word completion tasks (Vargas, Sekaquaptewa, & von Hippel, 2007), and physiological responses such as electrodermal activity (Ito & Cacioppo, 2007). Any of these procedures individually or in combination may reveal more information about implicit achievement goals.

Clearly, a number of possible methods for measuring implicit achievement goals exist. Most methods require restricting outcomes to known goals in order to create stimulus words or images. The Picture Story Exercise only minimally restricts the expression of goals, allowing additional, unexpected achievement goals to be revealed. Additionally, the Picture Story Exercise has been well established in the implicit achievement goal literature. Most importantly, a pilot study, described subsequently, has shown that the Picture Story Exercise is a useful tool for this purpose. Thus, although implicit achievement goals may be measured through a number of methods eventually, the ideal measure for initial research is the Picture Story Exercise.

Research Questions and Hypotheses

Whereas a great deal of research has been conducted to investigate self-attributed achievement goals in various settings and with various outcome measures, this study was the first experiment to explore implicit achievement goals. This investigation was the initial step toward understanding implicit achievement goals and offering a more complete model of achievement goals. The clarification and growth of our knowledge of achievement goals will help the field progress along its dual purposes of the pursuit of scientific truth and the pursuit of equal opportunities for optimal motivation to learn and achieve.

Specifically, this research was intended to address the following research questions:

Task Effort

- 1) Are implicit achievement goals related to task effort?
- 2) Does this relationship differ under the various conditions of performance feedback (ascending or descending) and feedback standard of comparison (self or norm)?
- 3) What is the contribution of self-attributed achievement goals to the above models?

Task Discontinuation

- 1) Are implicit achievement goals related to task discontinuation?
- 2) Does this relationship differ under the various conditions of performance feedback (ascending or descending) and feedback standard of comparison (self or norm)?
- 3) What is the contribution of self-attributed achievement goals to the above models?

Answers to these questions were pursued by measuring participants' implicit achievement goals and self-attributed achievement goals. Effort was measured by response time on a concentration task and persistence was measured by the decision to quit or continue with the task after several trials. During the task, participants were subjected to false self-referenced and norm-referenced feedback which ascended or descended independently.

Based on the previously described literature on the nature of implicit or non-conscious thought and on self-attributed achievement goals, hypotheses are as follows:

Task Effort

- 1) Implicit achievement goals are related to task effort.

Implicit beliefs and motivation influence non-conscious behavior, such as task effort. Implicit achievement goals are considered a subset of implicit motivation and, likewise, influence task effort.

- 2) Implicit achievement goals affect task effort in the descending feedback conditions.

Specifically, implicit mastery approach goals improve task effort in the descending self-referenced condition while implicit performance approach goals improve task effort in the descending norm-referenced condition. However, the avoidance dimensions of these goals may hinder performance under descending feedback conditions.

Evidence of worsening performance is theorized to ignite existing, related motivation, leading to a change in task behavior. Mastery goals are aligned with self-referenced performance evaluations while performance goals are aligned with norm-referenced performance evaluations. In the self-attributed achievement goal literature, the approach dimensions of these goals have fostered performance while the avoidance dimensions have dampened performance.

3) Self-attributed achievement goals do not affect task effort.

Consciously-held beliefs and motivations, such as self-attributed achievement goals, do not, in and of themselves, influence behaviors that are carried out on a non-conscious level, such as task effort.

Task Discontinuation

1) Implicit achievement goals are not related to task discontinuation.

In situations requiring conscious thought, such as explicit decision-making, implicit beliefs and motivations are easily overridden by consciously-held beliefs and motivations. Thus, implicit achievement goals do not affect the explicit decision to quit or continue a task.

2) Implicit achievement goals are not related to task discontinuation under any feedback conditions.

The statements above hold true even under various feedback conditions. Regardless of the degree to which an implicit achievement goal is ignited, its influence does not ‘cross over’ into conscious-behavior territory.

3) Self-attributed achievement goals affect task discontinuation.

The conscious decision whether to quit or continue the task is likely to be influenced by consciously-held achievement motivation goals. Just as with implicit achievement goals and task effort, mastery goals are expected to interact with descending self-referenced feedback while

performance goals are expected to interact with descending norm-referenced feedback. Approach dimensions of these goals should reduce task discontinuation while avoidance dimensions should increase task discontinuation.

Chapter 3

Methodology

Participants

Undergraduate students enrolled in education classes at the University of Kansas and psychology classes at the University of Missouri – Kansas City were asked to participate in exchange for class credit through course instructors and the participant pool. IRB approval was attained from both institutions. All willing participants were included in the sample regardless of demographic characteristics. Six would-be participants did not complete the study due to computer trouble. Of the 120 participants who completed the study, 79.3% were female. The sample was overwhelmingly White or Caucasian (80.7%), and also included Blacks or African Americans (9.2%), Asians (6.4%) and American Indians or Alaska Natives (3.7%). The sample was also generally non-Hispanic (86.7%). Ages ranged from 18 to 59 ($M = 25.64$, $SD = 7.14$).

Response Rate

The response rate for this study is difficult to estimate. At both schools, multiple classes of students were invited to participate and there was likely overlap in the individual students in each class; therefore, some students may have been asked to participate more than once. Out of 113 students across three classes, 56 University of Kansas students participated (50% response rate). At the University of Missouri – Kansas City, there are approximately 400 psychology majors. Although some psychology majors may not have been enrolled in a psychology class and some non-majors may have been enrolled, this is the number used to estimate the number of students invited to participate through the University of Kansas psychology pool. Of those students, 64 participated (16% response rate). Overall, there was an approximate response rate of 23%.

Design

The experimental design was a 2 (self-referenced feedback: ascending or descending) X 2 (norm-referenced feedback: ascending or descending) factorial. Participants were equally likely to be assigned to any of the four cells.

Procedures

The experiment was conducted in computer laboratory classrooms at both campuses, in groups of 1 to 14. As a group, participants were asked to read and sign the consent form, provided they chose to participate (see Appendix A for consent forms; see Appendix B for experimenter script). Next, they were told that all experiment instructions were written on the computer screen and they should raise their hands should questions arise. In order to collect data on implicit and self-attributed achievement goals, participants first completed the Picture Story Exercise, followed by the Achievement Goal Questionnaire, both described subsequently.

Following the measures of achievement goals, all participants completed the d2 Test of Attention, a mental concentration task described in greater detail below, as a measure of task effort. During the d2 Test of Attention, participants were subjected to the experimental manipulation: false feedback on their performance. Every participant received both types of false feedback, self-referenced and norm-referenced, after each of the second through eighth test blocks. Self-referenced feedback consisted of raw scores compared to one's own performance at various time points. Norm-referenced feedback consisted of percentile ranks to show one's performance relative to peers at various time points. Participants were randomly assigned to an ascending self-referenced feedback condition or a descending self-referenced feedback condition. Regardless of self-referenced feedback condition, participants were also randomly assigned to an ascending norm-referenced feedback condition or a descending norm-referenced

feedback condition. Thus, participants were randomly assigned to one of four possible experimental cells, each cell including two possible orders of feedback presentation (either self-referenced first or norm-referenced first), resulting in eight groups.

Computer-based instructions following the practice block conveyed the importance of the feedback to the task, explaining that feedback allows the participant to monitor their performance. Participants were shown a sample self-referenced line graph and a sample norm-referenced line graph and the meaning of each were explained. Participants read that although motor behavior habituates to this task and thus latencies speed up, the software program will remove the motor component in the participant's latencies before scores are calculated. This part of the instructions was included to ensure that participants believe that all feedback patterns are plausible.

Feedback was in the form of two line graphs presented for 8 s each with the order of self- or norm-referenced feedback counterbalanced across participants (see Appendix C for feedback examples). For each line graph, test blocks were plotted on the horizontal axis with either score (self-referenced) or percentile rank (norm-referenced) on the vertical axis. The line graphs appeared for the first time following the completion of the second test block and showed two connected points. An additional point was added following each test block until the final block, when eight points were shown. Self-referenced performance improved or declined while norm-referenced performance independently improved or declined.

Accompanying the self-referenced line graph, a statement read, "On this block, you have earned [number] points." The sequence of the number of points reported and represented in the line graph was 726, 738, 753, 746, 763, 774, 782, 790, in the ascending condition. The same sequence but in reverse order was presented in the descending condition. The scores reflected

consistent improvement or decline over the eight blocks except for Block 4 (ascending) or Block 6 (descending), which lent some appearance of credibility to the scores.

Accompanying the norm-referenced line graph, a statement read, “On this block, you have done better than [number]% of our previously tested participants.” The sequence of the percentile rank was 51, 53, 54, 57, 55, 58, 60, 61, in the ascending condition, and reversed in the descending condition. Note that the performance trend reverses in Block 5. The scores were all above average in order to avoid frustration related to below-average performance.

Finally, after completing the d2 Test of Attention and being asked to rate their satisfaction with their task performance as a manipulation check, participants were asked to decide whether they wanted to continue with the task or switch to a new task, a single item intended to measure task persistence. The experiment ended regardless of the decision. Participants completed a demographic questionnaire, were thanked, and were debriefed (see Appendix D for demographic questionnaire; see Appendix E for debriefing). In addition to an explanation of the purpose of the experiment, participants were informed that performance feedback was false and was entirely unrelated to their actual performance.

Instruments

Implicit Achievement Goals

Implicit achievement goals were assessed via the Picture Story Exercise (McClelland et al., 1953). The Picture Story Exercise is the most widely accepted measure of implicit achievement motivation (Spangler, 1992). For this study, updated pictures and a computer-based delivery system were used (Schultheiss & Pang, 2007). The Picture Story Exercise procedures were adopted to measure implicit achievement goals with the only development being the coding of the resulting data.

Pilot study. In a pilot study for this dissertation project (Beauchamp, 2007), stories written under the Picture Story Exercise (McClelland et al., 1953) procedure were examined for achievement goal definitions, those well represented in existing literature (mastery and performance) and those which had previously remained unidentified. Participants also reported their self-attributed achievement goals. Twenty-one students in a graduate education course participated in the pilot study.

Using Picture Story Exercise coding guidelines, the stories were coded for the presence of achievement imagery by picture. Next, the achievement imagery statements in the stories were collected and sorted thematically. The researcher was the only coder for this pilot study due to its exploratory nature. Thus, in order to ensure consistent coding, all of the stories were recoded using the list of goals from the previous reading.

The pilot study revealed that the Picture Story Exercise can be used to quantify levels of specific achievement goals, rather than simply broad achievement motivation levels. The types of goals appearing in the stories or in an open response item included: demonstrating competence to others, demonstrating competence to oneself, improving competence, exerting effort and tackling challenges, fulfilling potential, solving problems for self and others, and collaborating (see Appendix F for a full description). As this list was based on a small sample, it is by no means exhaustive and additional goals may be found in larger samples.

In addition to providing evidence that the Picture Story Exercise reveals specific achievement goal levels, the pilot study provided evidence indicating that implicit goals measured through the Picture Story Exercise are distinct from self-attributed achievement goals. For implicit achievement goals, demonstrating to others was positively related to demonstrating to self and negatively related to solving problems. Additionally, effort/challenge was positively

related to improving competence and negatively related to fulfilling potential. Unexpectedly, self-attributed mastery-avoidance was positively related to demonstration to others. Finally, self-attributed performance-avoidance was negatively related to collaboration. No other relationships emerged.

Present study. For the Picture Story Exercise, participants wrote stories in response to briefly viewed pictures. For each picture, participants viewed the picture for 15 seconds and then wrote a story, typing it on the computer, within approximately 5 minutes of the onset of the picture viewing. According to Picture Story Exercise procedure, participants were not strictly timed. Rather, participants were prompted, “You should be finishing your first [or second, etc.] story and beginning on the second [or third, etc.] by now,” 5 minutes and 15 seconds after the final participant reached the first [or second, etc.] picture and every 5 minutes and 15 seconds that followed until the final story, when they were told, “You should be finishing your final story by now.” In order to promote sufficient time for writing stories, participants had the option to continue from each story only after 4 minutes and 15 seconds have passed.

Participants began the Picture Story Exercise by reading the following instructions, adapted from Schultheiss and Pang (2007; adapted from Atkinson, 1958; Lundy, 1988; and Smith, Feld, & Franz, 1992):

Picture Story Exercise

In the Picture Story Exercise, your task is to write a complete story about each of a series of 5 pictures - an imaginative story with a beginning, a middle, and an end. Try to portray who the people in each picture are, what they are feeling, thinking, and wishing for. Try to tell what led to the situation depicted in each picture and how everything will turn out in the end.

Each picture will be presented for 15 seconds. After it has disappeared, write whatever story comes to your mind. Don't worry about grammar, spelling, or punctuation - they are of no concern here. There will be some guiding questions - these should be used only as guides to writing your story. You do NOT need to

answer them specifically. You will have about five minutes for each story; the computer will then let you know when you have 15 seconds left. If you take less than the entire five minutes, the computer will be ready to move on after four minutes.

As indicated in the instructions, participants saw several guiding questions at the top of each story prompt. The questions were:

What is happening? Who are the people?
What happened before?
What are the people thinking about and feeling? What do they want?
What will happen next?

The pictures that were used as stimuli for this study were selected to show one or two adults in various academic or work achievement settings with fairly vague instruments (see Appendix G). Efforts were made to represent men and women. Photo 1 depicted a young Black woman and a Black woman in an office conversing over a piece of paper. Photo 2 depicted a White woman and a young Black man in a classroom studying a book. Photo 3 depicted a young White man and another White man working in an engineering woodshop setting. Photo 4 depicted a Black man reading a notebook at an outdoor table. Photo 5 depicted a White woman carefully putting liquid in a beaker with an eyedropper.

In the pilot study that utilized three of these pictures as Picture Story Exercise stimuli with a sample of graduate students, the three photos demonstrated sufficient pull for achievement motivation (Beauchamp, 2007). For each of the three previously used photos, 14 of the 21 participants wrote stories that included evidence of achievement motivation. For the present study, each of the five photos demonstrated sufficient pull: 80% of participants wrote stories that included evidence of achievement motivation for Photo 1, 87% for Photo 2, 85% for Photo 3, 79% for Photo 4, and 86% for Photo 5.

Coding procedure. Using Picture Story Exercise scoring guidelines for achievement imagery established by McClelland et al. (1953) and maintained by their successors, each instance of achievement imagery was identified. McClelland et al. determined that achievement imagery was any instance which any character displayed competition with a standard of excellence through competition with a standard, unique accomplishment, or long-term involvement in an achievement goal. Raters first looked for any instance of affect, concern, or concerted effort among any story character. Next, raters determined whether that particular concern was associated with a goal or a standard of excellence. A given character can have multiple goals or no goals and a given goal can be reiterated within a story.

For greater specificity, each such instance was categorized into an implicit goal category: demonstrating competence to others, demonstrating competence to self, improvement, effort or challenge, fulfilling potential, solving problems for self and others, and collaborating (Beauchamp, 2007; see Appendix F for specific definitions of each category. These definitions were regularly referenced during coding.) These instances were scored as approach (seeking positive outcomes) or avoidance (avoiding negative or non-positive outcomes). A participant's mean number of instances of achievement imagery categorized into a given implicit goal category across all five stories was that participant's score for the implicit goal category, with one score for approach and one for avoidance.

In order to calculate scores for implicit achievement goals patterned from self-attributed achievement goals, implicit goal category scores were combined. The combinations were based on researcher judgment, using the definitions of mastery and performance goals established in the literature and described previously. Implicit mastery goals were the sum of improvement, effort or challenge, fulfilling potential, and solving problems for self and others. Implicit

performance goals were the sum of demonstrating to self and demonstrating to others. For each implicit goal, approach and avoidance scores were calculated. As recommended by Schultheiss and Pang (2007), implicit goal category rates were calculated: score / word count * 100. This method helps diminish the influence of story length on the number of goal statements.

Two coders learned the coding protocol and practiced scoring the stories collected for the pilot study. When the coders reached 95% agreement [85% agreement is the guideline recommended by Shultheiss and Pang (2007)], they discussed the points of disagreement, refined the coding guidelines, and began coding the data collected for the present study. Stories were coded by photo rather than by participant and were free of any identifying or demographic information. Following the independent coding of the entire collection of stories, the coders reviewed discrepancies. For each discrepancy, the relevant goal definitions were reviewed in order to reach agreement.

Internal consistencies for Picture Story Exercise are typically low ($\alpha = .20$ to $.50$; Pang, 2010), and this study offers no exception. Alpha levels for the present study were .14 for mastery approach, .49 for mastery avoidance, .42 for performance approach, and .24 for performance avoidance. This low reliability is expected because of the theoretical nature of motivational drives. Drives are strong until relevant needs are fulfilled at which time the drive weakens. In the case of the Picture Story Exercise, expressing motivation through relevant imagery in one story likely eases the drive, resulting in a weaker reaction to the subsequent picture cue. Additionally, motives may be somewhat situation-specific and, thus, elicited unequally by the various pictures.

Self-attributed Achievement Goals

Self-attributed achievement goals were assessed via the 12-item Achievement Goal Questionnaire (Elliot & McGregor, 2001, revised by Cury et al., 2006). The Achievement Goal

Questionnaire measures four achievement goals: mastery approach (e.g., “My goal is to completely master the material presented in this class.”), mastery avoidance (e.g., “My goal is to avoid learning less than I possibly could.”), performance approach (e.g., “I want to do well compared to other students.”), and performance avoidance (e.g., “It is important for me to avoid doing poorly compared to other students.”). Participants rated their agreement with each statement from 1 (*strongly disagree*) to 7 (*strongly agree*). For this study, items referring to “this class” were changed to “my classes”. Good internal consistency for the subscales of this version of the Achievement Goal Questionnaire have been previously reported ($\alpha_{\text{mastery-approach}} = .91$; $\alpha_{\text{mastery-avoidance}} = .91$; $\alpha_{\text{performance-approach}} = .90$; $\alpha_{\text{performance-avoidance}} = .89$; Cury et al., 2006). In the present study, internal consistency was fair to good: $\alpha_{\text{mastery-approach}} = .68$; $\alpha_{\text{mastery-avoidance}} = .61$; $\alpha_{\text{performance-approach}} = .84$; $\alpha_{\text{performance-avoidance}} = .81$. See Appendix H for the list of items.

The four self-attributed achievement goals as measured by the Achievement Goal Questionnaire have been shown to be related to several expected antecedents and consequences (Elliot & McGregor, 2001). For mastery approach, these included overall need for achievement, perceived class engagement, and deep processing. For mastery avoidance, these included fear of failure, perceived class engagement, disorganization, and worry. For performance approach, these included overall need for achievement, competitiveness, and exam performance. For performance avoidance, these included fear of failure, competence valuation, and disorganization. More recent research has found significant but miniscule relationships between semester GPA and mastery approach (positive) and performance avoidance (negative) goals when controlling for SAT (Finney, Pieper, and Barron, 2004). While both the Achievement Goal Questionnaire and the Patterns of Adaptive Learning Survey are waiting for psychometric

improvement (Muis, Winne, & Edwards, 2009), they are the best supported and most popular measures of achievement goal orientation currently available.

Task Effort

The performance task was Brickenkamp and Zillmer's (1998) d2 Test of Attention, which is a mental concentration task that assesses perceptual speed and selective attention and is conducted via computers. Brunstein and Maier (2005) used this task to investigate the effects of implicit and self-attributed achievement motivation on mental effort. For this task, participants were presented with stimuli that they must identify as *target* or *non-target*. A target stimulus was a 'd' accompanied by two lines. The 'd' may have two lines above or below or one line above and one line below to be a target. Non-target stimuli included a 'd' with zero, one, or three lines and a 'p' regardless of the number of lines. Targets and examples of non-targets are depicted in Figure 2. Participants pressed the 'j' key in response to target stimuli and the 'f' key in response to non-target stimuli. Participants completed a block of practice trials.

Figure 2

Targets and Examples of Non-Targets for the d2 Test of Attention.

Targets			Non-Target Examples		
$\overline{\overline{d}}$	\overline{d}	$\underline{\underline{d}}$	\overline{p}	\overline{d}	d

The task consisted of one practice block and eight test blocks, each consisting of 40 target stimuli and 40 non-target stimuli presented in random order. Following a centered fixation cross shown for 600 ms, the first stimulus was presented until the participant pressed one of the two keys, at which time the next stimulus was presented. As described previously, the experimental

manipulation occurred within this task with the presentation of false feedback following the second and each subsequent test block. Task effort was the mean response latency, in ms, for stimuli in the final block, with scores from the second test block partialled out. A lower resulting score reflects better task effort.

Performance Satisfaction

Following the eighth block, instructions appearing on the monitor asked participants to rate their satisfaction with their performance (1: *very poor*; 5: *very good*). This was the manipulation check.

Task Discontinuation

Task discontinuation was measured by participants' decisions whether to continue with the mental concentration task or to complete a new non-achievement task of purported equal importance to the experimenter.

The discontinuation option was presented at the end of the task instructions that followed the practice block and the decision was made following the eight test blocks. Participants were informed that they were to complete at least eight blocks but may then decide to “continue with this task or to switch to an associations task. The associations task is very similar to this task but is unrelated to ability or performance.” They were told that the experimenter was interested in both tasks and they should feel free to choose whichever task they prefer.

Although the discontinuation option was presented between the practice and test blocks, participants were prompted with the choice on the computer screen following the eight test block and the satisfaction item. Participants were asked, “Would you like to continue with this task or switch to the other task?” After 8 s, they were prompted to press ‘f’ to continue with the task or press ‘j’ to switch tasks. Task discontinuation was measured dichotomously: quit or continue.

Data Analysis

Task Effort Hypotheses

- 1) Implicit achievement goals are related to task effort.
- 2) Implicit achievement goals affect task effort in the descending feedback conditions.

Specifically, implicit mastery approach goals improve task effort in the descending self-referenced condition while implicit performance approach goals improve task effort in the descending norm-referenced condition. However, the avoidance dimensions of these goals may hinder performance under descending feedback conditions.

In order to test the above hypotheses, final-block test response time was regressed onto second-block response time (step 1), implicit goal levels (performance approach, performance avoidance, and mastery approach; step 2), experimental conditions (self-referenced feedback, norm-referenced feedback; step 3), condition X goal level interactions (step 4), two-way condition interaction (step 5), and two-way condition interaction X goal level interactions (step 6). Implicit mastery avoidance goal level was excluded from all analyses because of low occurrence.

- 3) Self-attributed achievement goals do not affect task effort.

In order to test this hypothesis, final-block test response time was regressed onto second-block response time (step 1), self-attributed goal levels (performance approach, performance avoidance, mastery approach, and mastery avoidance; step 2), experimental conditions (self-referenced feedback, norm-referenced feedback; step 3), condition X goal level interactions (step 4), two-way condition interaction (step 5), and two-way condition interaction X goal level interactions (step 6).

Task Discontinuation

- 1) Implicit achievement goals are not related to task discontinuation.
- 2) Implicit achievement goals are not related to task discontinuation under any feedback conditions.

In order to test the above hypotheses, decision to quit or continue was regressed onto implicit goal levels (performance approach, performance avoidance, and mastery approach; step 1), experimental conditions (self-referenced feedback, norm-referenced feedback; step 2), condition X goal level interactions (step 3), two-way condition interaction (step 4), and two-way condition interaction X goal level interactions (step 5). Implicit mastery avoidance goal level was excluded from all analyses because of low occurrence.

- 3) Self-attributed achievement goals affect task discontinuation.

In order to test this hypothesis, decision to quit or continue was regressed onto self-attributed goal levels (performance approach, performance avoidance, mastery approach, and mastery avoidance; step 1), experimental conditions (self-referenced feedback, norm-referenced feedback; step 2), condition X goal level interactions (step 3), two-way condition interaction (step 4), and two-way condition interaction X goal level interactions (step 5).

Once the initial models were analyzed, the regression equations were recalculated including only those factors that significantly contributed to the model. In the interest of identifying any associations that could possibly be fruitful for future research, a significance value of $p < .10$ was used to determine which factors were retained. This lenient significance level was also used to select associations for interpretation.

Chapter 4

Results

Descriptive Statistics

Experimental Groups

While the whole sample was 79.3% female, participants in each condition were from 75.5 to 82.5% female. The whole sample was overwhelmingly White or Caucasian (80.7%), and the subsamples ranged from 73.6 to 87.5% White or Caucasian. The whole sample was also generally non-Hispanic (86.7%), with subsample non-Hispanic rates ranging from 85.0 to 88.4%. Similar to the whole sample mean age of 25.64, subsample mean ages ranged from 24.44 ($SD = 5.84$) to 26.88 ($SD = 8.14$).

Independent Variables

For the Picture Story Exercise, participants wrote an average of 110.73 words per story (see Table 1). On average, they wrote 0.78 performance approach statements, 0.25 performance avoidance statements, 0.45 mastery approach statements, and 0.03 mastery avoidance statements per 100 words. These values were similar across experimental conditions (all T-test $ps > .23$, comparing direction of feedback within feedback type). Due to the very low frequency of mastery avoidance statements (88.3% of participants wrote no mastery avoidance statements), implicit mastery avoidance was excluded from further analyses.

Table 1

Mean (SD) Picture Story Exercise Word Counts and Goal Scores

		Feedback condition			
		Self-referenced		Norm-referenced	
	Whole sample (<i>N</i> = 120)	Ascending (<i>n</i> = 60)	Descending (<i>n</i> = 60)	Ascending (<i>n</i> = 55)	Descending (<i>n</i> = 65)
Mean word count	110.73 (39.44)	113.82 (42.04)	107.64 (36.75)	112.56 (36.61)	109.18 (41.90)
Performance approach	0.0078 (0.0040)	0.0081 (0.0041)	0.0076 (0.0038)	0.0078 (0.0040)	0.0079 (0.0040)
Performance avoidance	0.0025 (0.0026)	0.0022 (0.0022)	0.0027 (0.0028)	0.0027 (0.0025)	0.0023 (0.0026)
Mastery approach	0.0045 (0.0037)	0.0047 (0.0041)	0.0043 (0.0031)	0.0045 (0.0038)	0.0045 (0.0035)
Mastery avoidance	0.0003 (0.0009)	0.0003 (0.0009)	0.0003 (0.0009)	0.0003 (0.0009)	0.0003 (0.0009)

Note. Goal scores were calculated by dividing the total number of goal statements in a given category by the total word count. Mean word count is the total word count divided by the number of Picture Story Exercise stories (5).

For the Achievement Goal Questionnaire, participants generally endorsed goal statements with mean goal scores ranging from 3.60 (mastery avoidance) to 4.36 (mastery approach) on a scale of 1 (strongly disagree) to 5 (strongly agree; see Table 2). These scores were similar across experimental conditions (all T-test $ps > .18$, comparing direction of feedback within feedback type).

Table 2

Mean (SD) Achievement Goal Questionnaire Goal Scores

		Feedback condition				
		Whole sample (N = 120)	Self-referenced		Norm-referenced	
			Ascending	Descending	Ascending	Descending
			(n = 60)	(n = 60)	(n = 55)	(n = 65)
Performance						
approach	3.84 (0.86)	3.89 (0.88)	3.79 (0.85)	3.85 (0.95)	3.83 (0.79)	
Performance						
avoidance	3.82 (0.93)	3.94 (0.89)	3.71 (0.96)	3.77 (1.01)	3.87 (0.86)	
Mastery						
approach	4.36 (0.58)	4.42 (0.51)	4.29 (0.64)	4.33 (0.63)	4.37 (0.55)	
Mastery						
avoidance	3.60 (0.91)	3.57 (0.95)	3.63 (0.88)	3.67 (0.96)	3.54 (0.88)	

Note. Possible responses ranged from 1 (strongly disagree) to 5 (strongly agree).

Zero-order correlations among implicit and self-attributed goal scores were calculated. Only implicit performance approach goals and self-attributed performance approach goals were

related, but in the negative direction ($r = -.18, p < .05$, see Table 3). Implicit mastery avoidance goals were marginally positively related to self-attributed performance avoidance and to self-attributed mastery avoidance goals ($r = .17$ and $r = .18$, respectively, $ps < .10$).

Table 3

Correlations among Implicit and Self-attributed Goal Scores (N = 120)

		Implicit			
		Performance approach	Performance avoidance	Mastery approach	Mastery avoidance
Self-attributed	Performance approach	-.18*	-.08	.01	.11
	Performance avoidance	-.11	-.01	.09	.17†
	Mastery approach	-.15	-.02	.12	.10
	Mastery avoidance	-.09	-.05	.06	.18†

† $p < .10$. * $p < .05$.

Dependent Variables

Participants' task effort was measured by their mean response time for stimuli in the final test block. The mean response time was 566.75 ms ($SD = 157.89$). In all analyses using final response time, the second block response time was partialled out ($M = 704.26, SD = 142.93$). For task discontinuation, of the 118 participants who responded to the quit/continue prompt, 66.9% chose to quit. For satisfaction, on a scale of 1 to 5, participants were "moderately" satisfied with their performance, with a mean of 3.28 ($SD = .79$; 1 participant did not respond).

Manipulation Check

A 2 (self-referenced feedback: ascending or descending) X 2 (norm-referenced feedback: ascending or descending) analysis of covariance predicting satisfaction while controlling for second block response time was computed. While mean satisfaction ratings were slightly lower

for those in both descending feedback conditions ($M = 3.10$, $SD = .65$, $n = 31$) than for those in the remaining cells (e.g. $M_{\text{ascending conditions}} = 3.38$, $SD = .80$, $n = 26$), no main or interaction effects were found [$F_{\text{interaction}}(1, 114) = .20$, $p = .658$; $F_{\text{self}}(1, 114) = 3.81$, $p = .054$; $F_{\text{norm}}(1, 114) = .30$, $p = .585$]. However, the main effect for self-referenced condition approached significance. Satisfaction for those in the ascending self-referenced condition ($M = 3.40$, $SD = .81$, $n = 60$) was higher than for in the descending self-referenced condition ($M = 3.15$, $SD = .76$, $n = 59$).

Task Effort

Implicit Achievement Goals

Answers to the following research questions were explored and their associated hypotheses were evaluated:

- 1) Are implicit achievement goals related to task effort? It was hypothesized that implicit achievement goals are related to task effort.
- 2) Does this relationship differ under the various conditions of performance feedback (ascending or descending) and feedback standard of comparison (self or norm)? It was hypothesized that implicit achievement goals affect task effort in the descending feedback conditions. Specifically, implicit mastery approach goals improve task effort in the descending self-referenced condition while implicit performance approach goals improve task effort in the descending norm-referenced condition. However, the avoidance dimensions of these goals may hinder performance under descending feedback conditions.

In order to investigate these research questions regarding task effort, the relationships among implicit achievement goals and task effort, as indicated by response time, under various

conditions were explored via regression analyses. As stated previously, implicit mastery avoidance was excluded from analyses due to low occurrence. Final-block test response time was regressed onto second-block response time (step 1), implicit goal levels (step 2), experimental conditions (step 3), condition X goal level interactions (step 4), two-way condition interaction (step 5), and two-way condition interaction X goal level interactions (step 6).

Implicit achievement goal and condition factors accounted for a significant proportion of the variance in response time [$\Delta R^2 = .05$ ($p < .05$) for Step 6, see Table 4]. This result was driven by implicit mastery approach ($\beta = .21$, $p < .05$), the norm-referenced condition by implicit performance approach interaction ($\beta = .20$, $p < .05$), and the three-way self-referenced condition by norm-referenced condition by implicit mastery approach interaction ($\beta = -.22$, $p < .05$).

Table 4

Summary of Hierarchical Regression Analysis for Implicit Achievement Goals Predicting Response Time.

Variable	<i>B</i>	<i>SE B</i>	β
Step 1			
Constant	256.86	67.02	
2 nd block response time	0.44	0.09	.40***
Step 2			
Constant	258.25	66.22	
2 nd block response time	0.44	0.09	.40***
PAP	-1390.38	3319.17	-.04
PAV	1712.80	5169.90	.03
MAP	9490.32	3660.53	.22*
Step 3			
Constant	228.80	67.65	
2 nd block response time	0.48	0.09	.43***
PAP	-1873.25	3303.70	-.05
PAV	2775.42	5173.97	.05
MAP	9057.68	3639.06	.21*
SRC	25.80	13.37	.16†
NRC	5.46	13.17	.03
Step 4			
Constant	235.37	69.22	
2 nd block response time	0.47	0.10	.43***
PAP	-1374.23	3325.01	-.03
PAV	4440.46	5642.97	.07
MAP	9126.01	3860.92	.21*
SRC	26.92	13.47	.17*
NRC	4.69	13.26	.03
SRCxPAP	2491.94	3316.21	.06
SRCxPAV	753.12	5662.94	.01
SRCxMAP	1252.57	3956.19	.03
NRCxPAP	7233.98	3324.45	.18*
NRCxPAV	1441.82	5349.56	.02
NRCxMAP	-2690.59	3668.08	-.06

Table 4 (continued)

Variable	<i>B</i>	<i>SE B</i>	β
Step 5			
Constant	241.21	69.13	
2 nd block response time	0.46	0.10	.42***
PAP	-1219.34	3315.62	-.03
PAV	4093.42	5629.65	.07
MAP	9899.42	3891.97	.23*
SRC	24.67	13.53	.16†
NRC	4.61	13.21	.03
SRCxPAP	2474.73	3304.80	.06
SRCxPAV	1322.48	5659.87	.02
SRCxMAP	1016.50	3946.60	.02
NRCxPAP	7547.56	3311.55	.19*
NRCxPAV	779.40	5354.68	.01
NRCxMAP	-2354.55	3664.29	-.05
SRCxNRC	-17.50	13.26	-.11
Step 6			
Constant	231.66	68.29	
2 nd block response time	0.48	0.10	.44***
PAP	-1423.99	3236.52	-.04
PAV	2199.77	5826.36	.04
MAP	9245.59	3842.58	.21*
SRC	24.24	13.21	.15†
NRC	8.47	13.04	.05
SRCxPAP	1889.64	3236.13	.05
SRCxPAV	-505.28	5803.66	-.01
SRCxMAP	580.52	3861.83	.01
NRCxPAP	7889.64	3236.37	.20*
NRCxPAV	-2930.99	5788.21	-.05
NRCxMAP	-869.09	3839.99	-.02
SRCxNRC	-18.30	12.93	-.12
SRCxNRCxPAP	-6216.56	3235.33	-.16†
SRCxNRCxPAV	-2973.79	5821.49	-.05
SRCxNRCxMAP	-9424.24	3857.14	-.22*

Note. PAP is implicit performance approach goals; PAV is implicit performance avoidance goals; MAP is implicit mastery approach goals.

SRC is self-referenced condition; NRC is norm-referenced condition. For both condition variables, descending was scored -1 and ascending was scored 1.

$R^2 = .16$ ($p < .001$) for Step 1; $\Delta R^2 = .05$ ($p = .07$) for Step 2; $\Delta R^2 = .03$ ($p = .15$) for Step 3; $\Delta R^2 = .04$ ($p = .37$) for Step 4; $\Delta R^2 = .01$ ($p = .19$) for Step 5; $\Delta R^2 = .05$ ($p < .05$) for Step 6.

† $p < .10$. * $p < .05$. *** $p < .001$.

The relationship between response time and implicit mastery approach differed from zero only for those in both the descending self-referenced *and* ascending norm-referenced conditions ($r_{\text{response time implicit mastery approach} \cdot \text{2nd block response time}} = .38, p < .05$, see Table 5.) and for those in both the ascending self-referenced *and* descending norm-referenced conditions ($r_{\text{response time implicit mastery approach} \cdot \text{2nd block response time}} = .54, p = .001$). Fisher r-to-z transformations were used to calculate the significance of the differences among the correlations. For those in both the ascending self-referenced *and* descending norm-referenced conditions, the response time/implicit mastery approach relationship was significantly higher than for those in both ascending conditions ($z = 2.16, p < .05$) and for those in both descending conditions ($z = 1.97, p < .05$). These results indicate that, in either set of conditions in which some feedback is ascending while other feedback is descending, task effort worsened with an increase in implicit mastery approach. Thus, implicit mastery approach goals threaten task effort when participants are receiving mixed feedback. Meanwhile, implicit mastery approach did not influence task effort when feedback was entirely ascending or entirely descending.

Table 5

Partial Correlations between Response Time and Implicit Mastery Approach by Condition, Controlling for 2nd Block Response Time

Norm-referenced condition	Self-referenced condition	
	Ascending	Descending
Ascending	.01	.38*
Descending	.54**	.09

Note. * $p < .05$. ** $p < .01$.

Although the implicit performance approach interaction was only marginally significant, the relationship between response time and implicit performance approach differed from zero only for those in both the descending self-referenced *and* the descending norm-referenced

conditions ($r_{\text{response time implicit performance approach} \cdot \text{2nd block response time}} = -.38, p < .05$, see Table 6.) Again, Fisher r-to-z transformations were used to calculate the significance of the differences among the correlations. For those in both descending conditions, the response time/implicit performance approach relationship was significantly lower than for those in the ascending norm-referenced condition, regardless of self-referenced condition ($z_{\text{self-referenced ascending}} = 2.03, p < .05$; $z_{\text{self-referenced descending}} = 2.14, p < .05$). Thus, when feedback was entirely descending, response time lowered (task effort improved) with an increase in implicit performance approach, which was not the case in either condition combination in which norm-referenced feedback was ascending.

Table 6

Partial Correlations between Response Time and Implicit Performance Approach by Condition, Controlling for 2nd Block Response Time

Norm-referenced condition	Self-referenced condition	
	Ascending	Descending
Ascending	.17	.18
Descending	-.13	-.38*

Note. * $p < .05$.

Self-attributed Achievement Goals

The answer to the following research question was explored and its associated hypotheses were evaluated: What is the contribution of self-attributed achievement goals to the above models? It was hypothesized that self-attributed achievement goals do not affect task effort.

In order to compare the above-described implicit model using self-attributed achievement goals, an identical regression analysis was conducted with the four Achievement Goal Questionnaire achievement goal scores replacing the three Picture Story Exercise scores. None of the steps in the self-attributed model explained a significant amount of response time variance

(see Table 7). As such, self-attributed achievement goals were entirely unrelated to task effort, regardless of experimental condition.

Table 7

Summary of ΔR^2 Values for the Hierarchical Regression Analysis for Self-attributed Achievement Goals Predicting Response Time.

Step	Factors added	ΔR^2	<i>p</i> -value
1	2 nd block response time	.16	<.001
2	Self-attributed achievement goal levels	.03	.46
3	Experimental conditions	.03	.17
4	Condition x goal level interactions	.01	.99
5	Two-way condition interaction	.01	.38
6	Two-way condition interaction x goal level interactions	.01	.96

Task Discontinuation

Implicit Achievement Goals

Answers to the following research questions were explored and their associated hypotheses were evaluated:

- 1) Are implicit achievement goals related to task discontinuation? Implicit achievement goals were hypothesized to be unrelated to task discontinuation.
- 2) Does this relationship differ under the various conditions of performance feedback (ascending or descending) and feedback standard of comparison (self or norm)? Implicit achievement goals were hypothesized to be unrelated to task discontinuation under any feedback conditions.

In order to investigate these research questions regarding task discontinuation, the relationships among implicit achievement goals and response time under various conditions were explored via binomial logistic regression analyses. As stated previously, implicit mastery avoidance was excluded from analyses due to low occurrence. Decision to quit or continue was

regressed onto implicit goal levels (step 1), experimental conditions (step 2), condition X goal level interactions (step 3), two-way condition interaction (step 4), and two-way condition interaction X goal level interactions (step 5). No step offered significant explanation of the variance in task discontinuation (see Table 8). Thus, implicit achievement goals were entirely unrelated to task discontinuation, regardless of experimental condition.

Table 8

Summary of Binomial Logistic Regression Analysis for Implicit Achievement Goals Predicting Task Discontinuation.

Step	Factors added	$\Delta\chi^2$	df	p-value
1	Implicit achievement goal levels	1.44	3	.70
2	Experimental conditions	0.77	2	.69
3	Condition x goal level interactions	10.96	6	.09
4	Two-way condition interaction	0.04	1	.83
5	Two-way condition interaction x goal level interactions	0.62	3	.89

Self-attributed Achievement Goals

The answer to the following research question was explored and its associated hypotheses were evaluated: What is the contribution of self-attributed achievement goals to the above models? Self-attributed achievement goals were hypothesized to affect task discontinuation. Just as with implicit achievement goals and task effort, mastery goals are expected to interact with descending self-referenced feedback while performance goals are expected to interact with descending norm-referenced feedback. Approach dimensions of these goals should reduce task discontinuation while avoidance dimensions should increase task discontinuation.

In order to compare the above-described implicit model using self-attributed achievement goals, an identical binomial logistic regression analysis was conducted with the four Achievement Goal Questionnaire achievement goal scores replacing the three Picture Story Exercise scores. Only the third block, the condition X goal-level interactions, was significant

$[\Delta\chi^2 = 16.37 (df = 8, p = .04)$, see Table 9]. This was due to the self-referenced condition X mastery approach interaction and the norm-referenced condition X performance approach interaction. Although nonsignificant, the norm-referenced condition X performance avoidance interaction may also have contributed to the significance of the step.

Table 9

Summary of Binomial Logistic Regression Analysis for Self-attributed Achievement Goals Predicting Task Discontinuation.

Variable	β	SE β	Wald's χ^2	df	p	e^{β} (odds ratio)
Step 1						
Constant	0.73	0.20	13.05	1	<.001	2.07
PAP	-0.44	0.33	1.72	1	.19	0.65
PAV	0.61	0.31	3.85	1	.05	1.85
MAP	0.08	0.39	0.05	1	.83	1.09
MAV	-0.02	0.24	0.01	1	.92	0.98
Step 2						
Constant	0.72	0.20	12.69	1	<.001	2.05
PAP	-0.42	0.34	1.57	1	.21	0.66
PAV	0.60	0.32	3.58	1	.06	1.82
MAP	0.07	0.39	0.03	1	.86	1.07
MAV	-0.01	0.24	0.00	1	.98	0.99
SRC	0.02	0.20	0.01	1	.94	1.02
NRC	-0.14	0.20	0.46	1	.50	0.87
Step 3						
Constant	0.86	0.24	13.11	1	<.001	2.36
PAP	-0.52	0.39	1.80	1	.18	0.60
PAV	0.79	0.39	4.20	1	.04	2.21
MAP	-0.33	0.50	0.43	1	.51	0.72
MAV	-0.03	0.26	0.01	1	.92	0.98
SRC	-0.13	0.24	0.28	1	.60	0.88
NRC	-0.27	0.24	1.31	1	.25	0.76
SRCxPAP	0.23	0.42	0.29	1	.59	1.25
SRCxPAV	0.42	0.40	1.07	1	.30	1.51
SRCxMAP	-1.15	0.54	4.56	1	.03	0.32
SRCxMAV	0.07	0.27	0.07	1	.80	1.07
NRCxPAP	1.16	0.42	7.67	1	<.01	3.19
NRCxPAV	-0.66	0.38	2.99	1	.08	0.52
NRCxMAP	-0.58	0.46	1.65	1	.20	0.56
NRCxMAV	-0.20	0.27	0.57	1	.45	0.82

Table 9 (continued)

Variable	β	SE β	Wald's χ^2	df	p	e^{β} (odds ratio)
Step 4						
Constant	0.88	0.24	13.27	1	<.001	2.40
PAP	-0.61	0.40	2.31	1	.13	0.54
PAV	0.85	0.40	4.60	1	.03	2.34
MAP	-0.33	0.50	0.43	1	.51	0.72
MAV	0.00	0.26	0.00	1	.99	1.00
SRC	-0.14	0.25	0.34	1	.56	0.87
NRC	-0.29	0.24	1.42	1	.23	0.75
SRCxPAP	0.28	0.43	0.43	1	.51	1.32
SRCxPAV	0.40	0.41	0.97	1	.33	1.50
SRCxMAP	-1.18	0.54	4.74	1	.03	0.31
SRCxMAV	0.02	0.27	0.01	1	.94	1.02
NRCxPAP	1.22	0.43	7.92	1	<.01	3.38
NRCxPAV	-0.68	0.39	2.99	1	.08	0.51
NRCxMAP	-0.71	0.48	2.15	1	.14	0.49
NRCxMAV	-0.16	0.27	0.35	1	.55	0.85
SRCxNRC	0.21	0.24	0.74	1	.39	1.23
Step 5						
Constant	0.97	0.29	11.41	1	<.01	2.64
PAP	-0.83	0.48	2.92	1	.09	0.44
PAV	0.86	0.44	3.86	1	.05	2.36
MAP	-0.08	0.56	0.02	1	.89	0.93
MAV	0.00	0.27	0.00	1	1.00	1.00
SRC	-0.24	0.29	0.67	1	.41	0.79
NRC	-0.42	0.29	2.09	1	.15	0.66
SRCxPAP	0.39	0.48	0.64	1	.43	1.47
SRCxPAV	0.33	0.44	0.56	1	.46	1.39
SRCxMAP	-1.21	0.56	4.62	1	.03	0.30
SRCxMAV	0.00	0.27	0.00	1	1.00	1.00
NRCxPAP	1.39	0.48	8.25	1	<.01	4.01
NRCxPAV	-0.86	0.44	3.83	1	.05	0.43
NRCxMAP	-0.56	0.56	0.99	1	.32	0.57
NRCxMAV	-0.18	0.27	0.42	1	.52	0.84
SRCxNRC	0.27	0.29	0.87	1	.35	1.31
SRCxNRCxPAP	-0.28	0.48	0.33	1	.57	0.76
SRCxNRCxPAV	-0.04	0.44	0.01	1	.93	0.96
SRCxNRCxMAP	0.58	0.56	1.04	1	.31	1.78
SRCxNRCxMAV	0.01	0.27	0.00	1	.97	1.01

Note. PAP is self-attributed performance approach goals; PAV is self-attributed performance avoidance goals; MAP is self-attributed mastery avoidance goals; MAV is self-attributed mastery avoidance goals.

Note (continued). SRC is self-referenced condition; NRC is norm-referenced condition. For both condition variables, descending was scored -1 and ascending was scored 1.

Task continuation was coded 1 and task discontinuation was coded 2.

$\chi^2 = 4.40$ ($df = 4$, $p = .36$) for Step 1; $\Delta\chi^2 = 0.47$ ($df = 2$, $p = .79$) for Step 2; $\Delta\chi^2 = 16.37$ ($df = 8$, $p = .04$) for Step 3; $\Delta\chi^2 = 0.75$ ($df = 1$, $p = .39$) for Step 4; $\Delta\chi^2 = 1.42$ ($df = 4$, $p = .84$) for Step 5.

In order to examine the self-referenced X self-attributed mastery approach interaction, a pair of binomial logistic regression analyses was conducted for the ascending and descending self-referenced conditions. Decision to quit or continue was regressed onto self-attributed goal levels (step 1), norm-referenced condition (step 2), and norm-referenced condition X goal level interactions (step 3). In the full model, participants in the ascending self-referenced condition were .72 times less likely to quit with higher mastery approach scores [$\beta = -1.29$, $SE \beta = 0.90$, Wald's $\chi^2 = 2.07$, $df = 1$, $p = .15$, e^{β} (odds ratio) = 0.28]. In contrast, participants in the descending self-referenced condition were 3.12 times more likely to quit with higher mastery approach scores [$\beta = 1.14$, $SE \beta = 0.69$, Wald's $\chi^2 = 2.74$, $df = 1$, $p = .10$, e^{β} (odds ratio) = 3.12].

In order to examine the norm-referenced X self-attributed performance approach interaction as well as the norm-referenced X self-attributed performance avoidance interaction, a pair of binomial logistic regression analyses was conducted for the ascending and descending norm-referenced conditions. Decision to quit or continue was regressed onto self-attributed goal levels (step 1), self-referenced condition (step 2), and self-referenced condition X goal level interactions (step 3). In the full model, participants in the descending norm-referenced condition were .89 times less likely to quit with higher performance approach scores [$\beta = -2.22$, $SE \beta = 0.82$, Wald's $\chi^2 = 7.38$, $df = 1$, $p = .007$, e^{β} (odds ratio) = 0.11] and were 5.56 times more likely to quit with higher performance avoidance scores [$\beta = 1.72$, $SE \beta = 0.70$, Wald's $\chi^2 = 6.01$, $df = 1$, $p = .01$, e^{β} (odds ratio) = 5.56]. In contrast, participants in the ascending norm-referenced

condition were unaffected by either performance approach scores [$\beta = 0.56$, $SE \beta = 0.52$, Wald's $\chi^2 = 1.17$, $df = 1$, $p = .28$, e^{β} (odds ratio) = 1.76] or performance avoidance scores [$\beta = 0.00$, $SE \beta = 0.53$, Wald's $\chi^2 = 0.00$, $df = 1$, $p = 1.00$, e^{β} (odds ratio) = 1.00].

Chapter 5

Discussion

The concept of achievement goals as well as its supporting research has had broad-reaching implications. In addition to having been well-developed itself, the theory has been applied to a variety of related research problems within educational psychology and in other areas of psychology. Further, achievement goal theory has been integrated into the work of a generation of practicing teachers. However, due to the assumption of conscious awareness and its related measurement restrictions, achievement goal theory and research findings are plainly missing half of the picture. This dissertation introduces implicit achievement goals, providing a dualistic view of achievement goals and showing promise for completing that achievement goal picture.

The present study is the first to provide evidence that implicit achievement goals do exist and can be measured. They are distinct from each other and distinct from self-attributed achievement goals. Further, implicit achievement goals influence task performance in ways self-attributed achievement goals do not, and the reverse is also true. Task performance was examined in terms of both task effort and task persistence, revealing the nuanced effects of implicit achievement goals. If future studies replicate the findings reported in this dissertation, such findings will transform the achievement goals landscape.

Relationships among Goal Scores

The correlations among the implicit and self-attributed goal scores show the independence of the two constructs. Only one significant relationship emerged, that between implicit and self-attributed performance approach goals, and that relationship was in the negative

direction. This finding shows that, although the goals are defined in the same way whether implicit or self-attributed, individuals who hold a given implicit achievement goal will not necessarily hold the self-attributed version of that same goal. Thus, while we may hold certain goals in our conscious awareness or as part of our self-concepts, those goals are independent of those that we hold non-consciously. In order to obtain a complete profile of one's achievement goals, both implicit and self-attributed goals must be measured. While self-attributed and implicit achievement goals are not positively related, both are related to task performance, as discussed below. Therefore, the finding that implicit achievement goals are distinct from self-attributed achievement goals establishes implicit achievement goals as a unique feature of motivation.

Task Effort

The first achievement factor that was explored was task effort. Task effort was operationalized as improvement in response time from the baseline to the final block. As defined for the present study, task effort is a dimension of task performance that can operate without conscious awareness. This is especially true for tasks that require speed but neither skill nor knowledge, like the d2 Test of Attention that was used for the present study. Any improvement in speed is much more likely to be due to effort than to improvement in skill or knowledge. Task effort for this task belongs to the category of behaviors that occur without conscious decision-making. Immediately, increased effort generally leads to improved performance, given equal initial skill level. Also, the influence of such behaviors accumulates over time, leading to differences in long-term outcomes that require consistency, such as entrepreneurial success. Considering task effort operates without conscious awareness, it is theorized to be influenced by other non-conscious factors, such as implicit achievement goals.

It was hypothesized that implicit achievement goals are related to task effort and this was supported. In previous studies and in theory, descending feedback has amplified task effort. Thus, the examined relationship was mainly expected in descending feedback conditions, and this was partially supported. Implicit achievement goals are, in fact, related to task effort depending on feedback condition, but not in the ways predicted.

Task effort was unaffected by implicit mastery achievement goals when feedback was consistent: when self- and norm-referenced feedback was either jointly decreasing or jointly increasing. In other words, when participants were told that their raw scores were improving and that their performance was improving compared to their peers, task effort was neither helped nor hindered by participants' non-conscious desire to learn or improve. The same was true when participants were told that their raw scores were declining and that their performance was declining compared to their peers. Previously, students with self-attributed mastery goals were believed to view failure feedback as reflecting the difficulty of the task and to view feedback as informative. If this were true in the case of implicit achievement goals, task effort would have been helped by implicit mastery achievement goals when participants received jointly decreasing feedback. This finding points to a major difference between the influence of implicit and self-attributed achievement goals in the utilization of performance feedback.

Interestingly, while the relationship between implicit mastery achievement goals and task effort is unaffected by clear, unambiguous feedback, performance feedback still plays a role in the relationship. In this study, under conditions of ambiguous feedback (one type increasing and the other type decreasing), implicit mastery approach goals worsened task effort. Thus, when participants were told that their raw scores were improving but that their performance was

declining compared to their peers, task effort was hindered (response time was slowed) by participants' non-conscious desire to learn or improve. Further, the same effect was found when participants were told that their raw scores were declining but that their performance was improving compared to their peers. These relationships indicate that it is not the point of comparison (self or norm) or the direction (improving or declining) but it is the clarity or ambiguity of the feedback that interacts with implicit mastery goals. Rather than being a protective factor, as expected, implicit mastery approach goals actually jeopardize performance in the case of conflicting feedback and are otherwise unrelated to effort.

Without additional studies, interpreting this finding is difficult. One possibility is that those with high implicit mastery performance approach goals were stymied by the ambiguity. Confusion about how to improve performance may have slowed response time. This explanation is unlikely considering the lack of relationship between consistent feedback and implicit mastery achievement goals. Considering that those in consistent feedback conditions did not appear to utilize feedback, it is unlikely that those in ambiguous feedback conditions had slowed response times due to difficulty in utilizing feedback. As an alternative explanation, those same participants may have been frustrated by the ambiguous feedback and reduced their effort. Finding mastery elusive, these participants may have disengaged from the task, thus interfering with performance. This underscores the importance of clearly communicated feedback that is aligned with objective task goals, which is already a well-accepted principle of effective teaching.

As expected, task effort was affected by implicit performance approach goals when feedback was jointly descending. Under that condition, implicit performance approach goals

improved task effort. When participants were told that their raw scores were declining and that their performance was declining compared to their peers, task effort was helped by participants' non-conscious desire to prove their existing abilities. Further, it was expected that implicit performance approach goals would interact specifically with descending norm-referenced feedback, as both define success in comparison to others' performance. Trends in the data indicate that this interaction exists and future studies will likely replicate this finding. Therefore it appears as though people with high implicit performance approach goals are sensitive to failure feedback, particularly norm-referenced failure feedback, and they respond to such feedback with increased effort.

These findings are consistent with existing motivation theory, which states that feedback indicating a goal is not being met (i.e., failure feedback) can provoke action in individuals who hold relevant goals. In contrast, these findings are inconsistent with existing achievement motivation theory, which states that people holding performance goals also hold static beliefs about their skills (they do not believe improvement is possible). For these individuals, feedback indicating that a goal is not being met will lead to disengagement, or worsened performance. Once again, this study has provided findings that highlight differences between self-attributed and implicit achievement goals. In the case of implicit performance approach goals and task effort, higher levels of these goals are either neutral (under conditions of ascending norm-referenced feedback) or adaptive (under conditions of descending norm-referenced feedback), but are not maladaptive. Further studies may show that, while people with high self-attributed performance approach goals view their skills as static, that belief is not necessarily shared with people holding high implicit performance approach goals.

Implicit performance avoidance goals did not influence task effort under any condition. More than anything, this finding speaks to the difficulty in teasing out true relationships between behaviors and the oxymoronic “avoidance motivation”. While motivation is a press, leading to thought or action, avoidance dampens. The combination of the two may lead to outcomes through indirect routes, or may lead to less apparent outcomes, such as differences in affect. Additionally, the nature of avoidance types of motivations cause measurement difficulty; measuring the degree to which a person is trying not to feel, think, or act, is inherently challenging. Thus, in spite of the lack of demonstrated relationship in this study, implicit performance avoidance goals are still construct worthy of further investigation.

It was hypothesized that self-attributed achievement goals were unrelated to task effort, a hypothesis supported by the data under every condition. This finding was anticipated because, as described previously, task effort is a non-conscious process, overseen by non-conscious forces. Self-attribution requires conscious awareness of personal qualities or behaviors, or, more likely, conscious beliefs about personal qualities or behaviors. Therefore, self-attributed constructs, including self-attributed achievement goals, are conscious processes that are powerless over decisions made without conscious awareness (e.g., degree of effort exertion). While previous studies have related self-attributed achievement goals to various facets of task performance, those studies have failed to focus on this critical aspect of task performance. The lack of an effect of self-attributed achievement goals on task effort reveals the Achilles heel of the current state of achievement goal research. Fortunately, the present study offers a significant contribution to achievement goal research by revealing an additional component of achievement goals, implicit achievement goals, that does, in fact, influence task effort.

Task Discontinuation

The second achievement factor that was explored was task discontinuation, or quitting. For this study, task discontinuation was operationalized as the decision to continue with the task or switch to a similar, non-achievement task after completing the sixth test block and receiving the final false feedback. Task discontinuation in the face of an explicit request for a decision is considered to be a conscious aspect of task performance because it is an overt choice. Overt choices, such as quitting in this study, as well as course selection, for example, have immediate and long-term effects on performance. Immediately, quitters or people who choose an easier course lose out on the opportunity to perform at higher levels. In the long-term, this lost opportunity translates to lower skill levels, hindering subsequent performance. Considering task discontinuation requires conscious awareness, it is theorized to be unrelated to non-conscious factors, such as implicit achievement goals, but also to be influenced by other conscious factors, such as self-attributed achievement goals.

It was hypothesized that implicit achievement goals are unrelated to task discontinuation. This hypothesis was clearly supported by the study findings; in every condition, implicit achievement goals had no relationship with task discontinuation. Considering that relationships were found between implicit achievement goals and task effort, these results provide evidence supporting the implicit or non-conscious nature of implicit achievement goals. While implicit achievement goals do serve to influence task performance, their influence may be limited to non-conscious processes. Regarding conscious processes, implicit achievement goals either are ineffectual or are easily overridden by conscious factors such as self-attributed achievement goals. Additionally, given that relationships were found between self-attributed achievement

goals and task discontinuation, as described subsequently, the lack of relationship between implicit achievement goals and task discontinuation provides further evidence that self-attributed achievement goals are distinct from implicit achievement goals.

It was also hypothesized that self-attributed achievement goals were related to task discontinuation, depending on condition. The findings supported this hypothesis. Self-attributed mastery approach goals influenced task discontinuation depending on self-referenced feedback condition, however not entirely as expected. Theoretically, while people with higher self-attributed mastery approach goals are more likely to persist under any condition, they are especially persistent in the face of descending self-referenced feedback. This protective effect is hypothetically due to the mastery approach view that feedback, especially failure feedback, is informative about the task and is itself a useful tool. Further, self-referenced feedback is particularly helpful compared to norm-referenced feedback because it's more closely related to the individual's actual performance.

For this study, participants who were given ascending self-referenced feedback were more likely to continue with the task when they had higher self-attributed mastery approach goals, as would be expected. However, participants who were given descending self-referenced feedback were more likely to quit the task when they had higher self-attributed mastery approach goals. This finding shows that when people are told they are underperforming, those who had reported a desire to improve their skills are more likely to quit than others. This second finding was unexpected according to existing achievement goal theory; however, other factors may have influenced participants' decisions. For example, participants, failing or otherwise, were not offered any type of support to help improve their performance. A participant with descending

failure feedback and high self-attributed mastery approach goals may have recognized a) the significant gap between their goals and performance, but also b) the lack of resources available to help them narrow the gap and decided continuing in the task would be a waste of effort. Clearly this is merely a conjecture and requires specific study. Regardless of this unexpected finding, people with high self-attributed mastery approach goals definitely respond to varying self-referenced feedback through task discontinuation behaviors, once again reinforcing the concept that self-attributed achievement goals are conscious in nature and, thus, distinct from implicit achievement goals.

Self-attributed mastery avoidance goals were unrelated to task discontinuation. The inability to relate self-attributed mastery avoidance goals to either performance outcome, as well as the inability to detect implicit mastery avoidance goals, may be rooted in one of three concerns. First, mastery avoidance goals may be difficult to measure. Although the Achievement Goal Questionnaire items are confusing (e.g. “My goal is to avoid learning less than I possible could”), the concept itself is unclear as well (aiming to prevent failure to learn or improve). The goal itself is not clearly defined so the related items, either in self-attributed or implicit measures, are unclear as well. Second, avoidance-type motivations may have outcomes that are difficult to predict or measure, as described previously. Third, mastery avoidance goals may be a weak or nonexistent construct. As discussed in the literature review, researchers have yet to find evidence of strong relationships between mastery avoidance goals and outcomes. However, this final concern is well beyond the scope of the present dissertation.

Finally, self-attributed performance avoidance goals were related to task discontinuation depending on norm-referenced feedback condition. This was expected because a) performance

goals are norm-referenced goals and b) both self-attributed goals and task discontinuation are conscious constructs. In accordance with achievement motivation theory, self-attributed performance goals influenced task discontinuation in the descending norm-referenced feedback condition but not in the ascending norm-referenced condition. Thus, as expected, failure feedback ignited the motivation/behavior relationship, resulting in a change in quitting for those with relevant goals while success feedback resulted in no change in behavior.

Within the descending norm-referenced feedback condition, those with higher levels of self-attributed performance approach goals were less likely to quit than others. In the same condition, those with higher levels of self-attributed performance avoidance goals were more likely to quit than others. This finding underscores the generally adaptive nature of self-attributed performance approach goals and the generally maladaptive nature of self-attributed performance avoidance goals, and is in line with existing achievement goal theory.

Limitations and Future Studies

Several limitations are associated with this study, all of which can be addressed in future research. First, the study population was restricted to psychology undergraduate and psychology and education graduate students in the Midwest. These students likely had greater awareness of the distinction between mastery- and performance-type goals than the greater student population. This awareness may have affected their reporting of self-attributed goals and may have been related to their implicit achievement goals, although the relationship is unclear. Future studies with varied populations are necessary.

Second, for the purposes of reliable scientific inquiry, the experimental task for this study was highly distilled. While there is great confidence that the task elicited and measured effort,

the extent to which effort on this task is generalizable to effort in the context of real-world achievement settings is questionable. Additionally, a student willing to continue with the d2 Test of Attention may differ from a student willing to continue with, say, a difficult reading or math task. While future studies defining effort this precisely are necessary, so are future studies that use tasks that reflect real-world achievement settings as well as studies that use data on actual achievement.

Finally, the Picture Story Exercise was repurposed for this study and has not been studied rigorously as a measurement tool for collecting implicit achievement goal data. Further, the coding process, while standardized and carefully conducted, is somewhat subjective. These two issues do not reduce the validity of the Picture Story Exercise; however, they call for replication of the present study using the Picture Story Exercise as well as other measurement tools yet to be developed. Additionally, they call for the development of additional measurement tools for implicit achievement goals in order to validate the existing measure and to improve accuracy.

The present study represents a glimpse through a keyhole, with the potential to reveal the nature of implicit achievement goals and to expand and strengthen achievement goal theory. In order to unlock and open the door, many lines of inquiry must be followed, in addition to those described previously. One such line is determining whether or not implicit achievement goals fall under the same broad categories as self-attributed achievement goals. For the present study, implicit achievement goals were confined to mastery and performance, approach and avoidance. However, for the pilot study, many more categories of goals were identified, some were subsets of mastery or performance and some were in addition to these two goals. Future studies are needed to examine which of these influence achievement and behavior.

While beyond the scope of this study, a critical next step is examining how implicit and self-attributed achievement goals interact to exert influence on performance. For example, what are the performance implications of having high self-attributed mastery goals along with high implicit mastery goals? Much further down the research line, eventually studies may identify causal factors of implicit achievement goals, possibly based on cultural or familial influence.

Conclusion

Taken as a whole, the findings in this dissertation reveal that implicit achievement goal systems are distinct from self-attributed achievement goal systems, with both types of goals bearing differing influence on two distinct aspects of task performance: task effort and task discontinuation. Although this is clearly an initial attempt at establishing implicit achievement goals within achievement goal theory, its importance is evident. Achievement goal research to date has yielded findings in need of improved consistency, strength, and relevance. The addition of the implicit achievement goal construct to achievement goal models fortifies the model and further reveals the multifaceted nature of motivation.

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Appendix A

Consent Forms

Consent Form for University of Kansas

<p>Approved by the Human Subjects Committee University of Kansas, Lawrence Campus (HSCL). Approval expires one year from 10/5/2007</p>	<p>Approved by the Human Subjects Committee University of Kansas, Lawrence Campus (HSCL). Approval expires one year from 10/5/2007</p>
<p style="text-align: center;">CONSENT FORM</p> <p>The Department of Psychology and Research in Education at the University of Kansas supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study. You may refuse to sign this form and not participate in this study. You should be aware that even if you agree to participate, you are free to withdraw at any time. If you do withdraw from this study, it will not affect your relationship with this unit, the services it may provide to you, or the University of Kansas.</p> <p>In this study, you will be asked to write stories about pictures. You will also be asked to respond to questions about your goals in school. Next, you will complete an attention/concentration task. Finally, we will ask you to complete demographic questions. It is estimated that this study will take no more than 1 hour of your time. There are no apparent risks or discomforts of any kind to you as a participant in this study. Although participation will not directly benefit you, we believe that the information you provide will be useful in furthering our understanding of how our goals relate to attention/concentration.</p> <p>Your participation is solicited although strictly voluntary. We assure you that your name will not be associated in any way with the research findings. The information you provide will not include any identifying information about you other than some basic demographic information. Your name will appear only in this consent form, which will be kept apart from all other materials in our research files.</p> <p>If you would like additional information concerning this study at any time, please contact me or the Human Subjects Committee (dhann@ku.edu). A copy of this consent form will be given to you before you leave the experiment today.</p> <p>Sincerely,</p> <p>Anne Beauchamp, annebeau@ku.edu, and Shane Lopez, sjlopez@ku.edu, 621 JRP Hall, Lawrence, KS 66045</p> <p>Signature of participant <i>My signature indicates that I am at least 18 years of age, that I have received a copy of this consent form, and that I understand I may withdraw from the study at any time.</i></p>	<p style="text-align: center;">CONSENT FORM</p> <p>The Department of Psychology and Research in Education at the University of Kansas supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study. You may refuse to sign this form and not participate in this study. You should be aware that even if you agree to participate, you are free to withdraw at any time. If you do withdraw from this study, it will not affect your relationship with this unit, the services it may provide to you, or the University of Kansas.</p> <p>In this study, you will be asked to write stories about pictures. You will also be asked to respond to questions about your goals in school. Next, you will complete an attention/concentration task. Finally, we will ask you to complete demographic questions. It is estimated that this study will take no more than 1 hour of your time. There are no apparent risks or discomforts of any kind to you as a participant in this study. Although participation will not directly benefit you, we believe that the information you provide will be useful in furthering our understanding of how our goals relate to attention/concentration.</p> <p>Your participation is solicited although strictly voluntary. We assure you that your name will not be associated in any way with the research findings. The information you provide will not include any identifying information about you other than some basic demographic information. Your name will appear only in this consent form, which will be kept apart from all other materials in our research files.</p> <p>If you would like additional information concerning this study at any time, please contact me or the Human Subjects Committee (dhann@ku.edu). A copy of this consent form will be given to you before you leave the experiment today.</p> <p>Sincerely,</p> <p>Anne Beauchamp, annebeau@ku.edu, and Shane Lopez, sjlopez@ku.edu, 621 JRP Hall, Lawrence, KS 66045</p> <p>Signature of participant <i>My signature indicates that I am at least 18 years of age, that I have received a copy of this consent form, and that I understand I may withdraw from the study at any time.</i></p>

Consent Form for University of Missouri – Kansas City

APPENDIX A: Consent Form
Page 1 of 2

Version Date: 09/12/07
Page 1 of 2

Consent for Participation in a Research Study

Beauchamp Study 1

Anne Beauchamp

Invitation to Participate

You are invited to participate in a research study.

Who will Participate

Undergraduate students at the University of Missouri-Kansas City who are 18 years old or older are eligible to participate.

Purpose

The purpose of this study is to investigate how interpretations of various stimuli (both written and pictorial) relate to performance on a task of attention/concentration.

Description of Procedures

In this study, you will be asked to write stories about pictures. You will also be asked to respond to questions about your goals in school. Next, you will complete an attention/concentration task. Finally, we will ask you to complete demographic questions. It is estimated that this study will take no more than 1 hour of your time and will be completed in one session.

Voluntary Participation

There are no apparent risks or discomforts of any kind to you as a participant in this study. Participation in this study is voluntary at all times. You may choose to not participate or to withdraw your participation at any time. Deciding not to participate or choosing to leave the study will not result in any penalty or loss of benefits to which you are entitled.

If you decide to leave the study the information you have already provided may still be used for research purposes only if the information is non-identifying.

Fees and Expenses

There are no monetary costs to participants.

Compensation

Participants may be granted extra credit in a psychology course as arranged by their instructors through the use of the psychology department's participant pool. Even if you choose to withdraw consent before the study is completed, you will earn the credit.

Form Revision Date: 9/15/04

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INITIALS APPRVD from: 11/14/07 to: 11/15/08

Risks and Inconveniences:

There are no known risks associated with participating in this study.

Benefits

There are no direct benefits to participants for participating in this study. Participation contributes to psychologists' knowledge of attention/concentration.

Confidentiality

Names, including signed consent forms, will be kept separate from the remainder of the data in order to ensure confidentiality. Only researchers directly associated with this project will have access to the data. The electronic data will be stored on a network drive with limited password-required access.

While every effort will be made to keep confidential all of the information you complete and share, it cannot be absolutely guaranteed. Individuals from the University of Missouri-Kansas City Institutional Review Board (a committee that reviews and approves research studies), Research Protections Program, and Federal regulatory agencies may look at records related to this study for quality improvement and regulatory functions.

In Case of Injury

The University of Missouri-Kansas City appreciates the participation of people who help it carry out its function of developing knowledge through research. If you have any questions about the study that you are participating in you are encouraged to call Anne Beauchamp, the investigator, at 816-235-1318.

Although it is not the University's policy to compensate or provide medical treatment for persons who participate in studies, if you think you have been injured as a result of participating in this study, please call the IRB Administrator of UMKC's Social Sciences Institutional Review Board at 816-235-1764.

Questions

Please contact Anne Beauchamp at 4825 Troost Room 108, 816-235-1318, or beauchampa@umkc.edu.

Authorization

Participant's signature	Date	Investigator's signature	Date
		Anne Beauchamp	
Participant's printed name		Investigator's printed name	

Form Revision Date: 9/1/04

UMKC SOCIAL SCIENCES
INSTITUTIONAL REVIEW BOARD
INIT OK APPRVD from: 11/14/07 to: 11/15/08

Appendix B

Experimenter Script

- 1) Thank you for agreeing to participate in this study.

Distribute consent statements.

- 2) These are consent statements. They inform you about the study's purpose, what will be asked of you, and the approximate time commitment. Please take as much time as you need to read the statement. Participation is voluntary and you can decline to participate now or at any time. Please sign the consent form if you agree to participate.

Once all forms have been signed, collect the forms, thanking participants.

- 3) All of today's data will be collected on these computers. Please be sure to read all of the instructions carefully – I will not be reading instructions aloud. Please try not to disturb the other participants. If you have a question at any time, please raise your hand. Please read the welcome screen and begin when you are ready.

Note the time that the last participant reaches the first picture.

Wait 5m 15s from that time.

- 4) You should be finishing your first story and beginning on the second by now.

Wait 5m 15s.

- 5) You should be finishing your second story and beginning on the third by now.

Wait 5m 15s.

- 6) You should be finishing your third story and beginning on the fourth by now.

Wait 5m 15s.

- 7) You should be finishing your fourth story and beginning on the final story by now.

Wait 5m 15s.

- 8) You should be finishing the final story by now.

You may work quietly while you wait but watch for raised hands.

Wait until participants finish all studies.

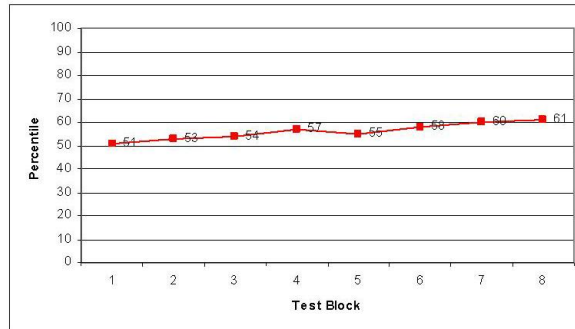
Distribute the debriefing and consent receipt as individuals leave the room.

Appendix C

d2 Test of Attention False Feedback Examples

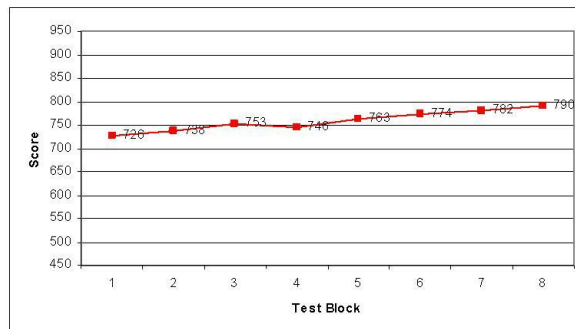
Increasing Norm-Referenced Feedback, Final Block

On this block, you have done better than 61% of our previously tested participants.



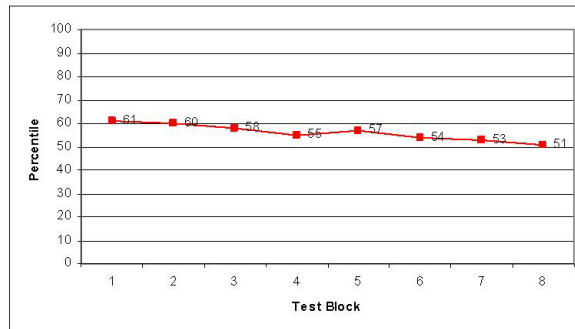
Increasing Self-Referenced Feedback, Final Block

On this block, you have earned 790 points.



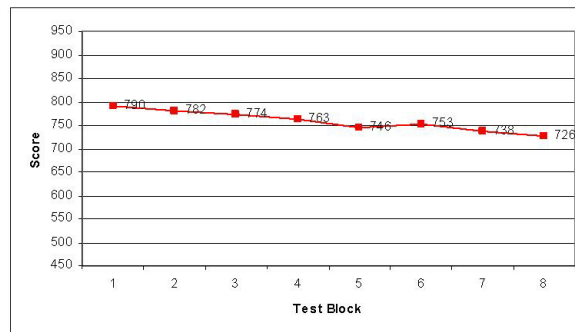
Decreasing Norm-Referenced Feedback, Final Block

On this block, you have done better than 51% of our previously tested participants.



Decreasing Self-Referenced Feedback, Final Block

On this block, you have earned 726 points.



Appendix D

Demographic Questionnaire

In order to describe our participants as a group, we would like to collect some demographic information from you. This information will be used to describe groups of participants and will not be used to describe individual participants. This is an essential part of our study and your answers will be kept confidential. We appreciate your help.

Press space to continue.

Please type your gender (male or female).

Please type your age.

Please indicate the racial category with which you identify by typing the correct number (1-5;

You may type more than one number.):

1. American Indian or Alaska Native
2. Asian
3. Black or African American
4. Native Hawaiian or Other Pacific Islander
5. White or Caucasian

Are you Hispanic/Latino (yes or no)?

What is the semester and year you entered college (example: Fall 2005)?

Please indicate your class year by typing the correct number (1-4):

1. First year
2. Sophomore
3. Junior
4. Senior

Please type your best estimate of the number of semesters you have left before you graduate.

If you have declared a major, list your major(s). Otherwise, type “undeclared”.

At the end of last semester, what was your overall GPA?

At the end of last semester, what was your major GPA?

Please list the courses you are taking this semester and the grade you anticipate earning (ex. Basketweaving B-).

Please indicate the highest level of education you anticipate completing by typing the correct number (1-6).

1. Some college
2. 2-year degree
3. 4-year degree
4. Master's
5. Doctorate
6. Professional degree (JD, MD)

Please indicate the highest level of education any of your parents/guardians completed by typing the correct number (1-8).

1. Less than high school
2. High school/GED
3. Some college
4. 2-year degree
5. 4-year degree
6. Master's
7. Doctorate
8. Professional degree (JD, MD)

Appendix E

Debriefing

Thank you for participating in this study. The following is an explanation of the purpose of the study as well as an explanation of some false information you received during the study.

The purpose of this study was to learn about the achievement goals people hold non-consciously, or without their awareness. The stories you wrote in response to the pictures may tell us what kinds of goals you hold. We also asked you to answer explicit questions regarding the goals you hold consciously.

Next, you completed a task, which was a test of your attention or concentration. While the instructions you read were true, some participants read instructions that emphasized collecting data about the *task*, while others read instructions that emphasized collecting data about *individuals' abilities*. These instructions may interact with your non-conscious and conscious goals to influence performance.

One aspect of your performance that we measured was your response time. However, the feedback we gave you regarding your score and your percentile rank was entirely unrelated to your actual performance. Two patterns of scores and two patterns of percentile ranks were determined ahead of time and shown to you based on random assignment. You were given feedback because people react to their own performance by increasing or decreasing effort, depending upon their goals and their feedback. The feedback you were given is false because that is the only way to ensure that any effects are due to the feedback, not your actual performance.

Another aspect of your performance that we measured is persistence – whether you continued with the task when given a choice. You were told that we needed data on the task you were already working on, and on a second, different task. At the end of the task, you were asked which task you would agree to complete. In order to get accurate responses, we needed you to believe that you were actually agreeing to complete an additional task, but we did not need any additional data. Thus, there was no actual additional task.

Even though you signed a consent form, you have the right to withdraw from the study at this time.

Are there any questions about the purpose of the research, the methods, or the deception?

If you think of any questions at another time, please feel free to contact the researchers on your receipt of the consent form.

Again, thank you very much for participating in this experiment.

Appendix F

Achievement Goal Definitions from Beauchamp (2007) Pilot Study

Demonstrating competence to others. Demonstrating competence to others is the essence of a performance goal. Urdan and Mestas (2006) investigated the goals that underlie students' performance goals and found evidence that many performance goals have an interpersonal quality. That is, they show concern for others' reactions to oneself based on one's performance. Statements reflecting this goal include striving:

- To get good grades, recognition, or attention from others for doing well.
- To earn opportunities offered by others, such as jobs or acceptance to programs.
- To earn privileges or awards (e.g., honor roll, class champion) offered by others.
- To meet the demands and expectations of others.
- To show others your abilities or to have your good work placed in the spotlight.
- To impress others or to make others proud of you.

Demonstrating competence to oneself. Demonstrating competence to oneself is similar to performance goals as described in previous literature. However, instead of concern for others' approval, demonstrating competence to oneself reflects an intrapersonal quality (Urdan & Mestas, 2006) and speaks to one's need to bolster one's self-concept in terms of ability. Although this type of goal is suggestive of mastery goals because of the emphasis on one's own standards, there is not concern for *improvement*, rather only concern for *demonstrating* competence. Statements reflecting a goal to demonstrate competence to oneself include striving:

- To use your knowledge to complete tasks.
- To use your knowledge to help you learn something new.

- To feel satisfied knowing what you can do.
- To show yourself that you're as able as you imagine you are.
- To do good work according to your own standards.
- To be able to explain what you know to others.

Improving competence. The desire to improve competence is at the heart of mastery goals. However, as Grant and Dweck (2003) described, mastery goals can be operationalized in multiple ways. One such way is as learning goals, which reflect a desire to improve competence. Statements reflecting a goal to improve competence include striving:

- To understand new information.
- To improve skills or abilities.
- To understand mistakes in order to do better next time.
- To pursue an interest or curiosity.
- To seek as much information as possible.
- To explore and experiment to find new knowledge.

Recently, Flum and Kaplan (2006) argued that exploration, “engagement with the environment and ... [acquiring] information through interaction with the world,” may be an educational goal (p. 100). Some statements that were previously considered aspects of improving competence, such as the final three listed above, may be qualitatively distinct from improving competence and may instead reflect a unique exploration goal.

Exerting effort and tackling challenges. The goal to exert effort and tackle challenges is a type of mastery goal that Grant and Dweck (2003) labeled “challenge-mastery.” Statements considered reflective of seeking challenge include striving:

- To seek challenges or to overcome personal obstacles.
- To persist through difficulty or to not give up.
- To put forth honest effort.

Fulfilling potential. Fulfilling one’s potential is an aspect of identity development in which one seeks to identify and express one’s intrinsic nature; one seeks self-realization or eudaimonia (Waterman, 1981, 2005). Previously, fulfilling potential was not included among definitions of achievement goals. Statements reflecting fulfilling potential included striving:

- To become the best you can be; to achieve your personal best.
- To make something of yourself.
- To see what you could be capable of; to realize your full potential.
- To feel fulfilled.

Solving problems for self and others. Although opportunities to solve real problems tend to be limited in classroom environments, solving problems for oneself and for others is a cornerstone of progressive education (e.g. Dewey, 1897). Statements reflecting this pragmatic goal include striving:

- To solve a real problem.
- To see the positive effects of something you’ve done.
- To do or create something that will benefit others.
- To prevent something from damaging or harming others.

- To contribute to your community or your field.

Collaborating. The pilot study for this dissertation provided evidence that some students may feel successful if they have worked collaboratively in achievement settings. Urdan and Maehr (1995) argued that students have social purposes for achievement. The literature reflects some exploration of goals related to collaboration. Nicholls and colleagues (1985) measured social goals (e.g., “I feel most successful when I work with friends.”) and Summers (2006) investigated the concept of shared achievement as a goal.

Appendix G

Picture Story Exercise Stimuli



Photo #1



Photo #2



Photo #3



Photo #4



Photo #5

Appendix H

Examples of Coded Stories

Story set with low scores.

- 1) A teacher is helping a student doing her homework. The student is working on her midterm paper in college. She is at the student writing assistant center seeking help on doing her writing assignment. Since she actively seeking help and is working on it diligently, she will receive a good grade on this assignment.
- 2) Another student is seeking help while studying his assigned reading. The student is a young African American male and the teacher is an older white female. The teacher looks happy to help the student with his homework.
[Mastery approach – solving problems for self & others]
- 3) Two people are working on an experiment in a lab. It looks like a physics lab. They are taking some kind of measurements of tensor strength. It's probably used for civil engineering.
- 4) A young African American male student is studying in a court yard. It's sunny and the temperature is mild. It's the middle of the day.
- 5) A white young lady is doing a lab project. The lab looks like a chemistry lab with solutions and test tubes. She looks like a graduate student.

Story set with a high performance approach score.

- 1) This picture portrays two women in the middle of a meeting. The older woman on the left is a professor and the younger woman on the right is a student. The meeting that they are having is to discuss a test or paper that has been graded and returned to the student. The student has some concern about the grade she received on the assignment and they professor is telling her what scale she used to grade the assignment. The student of course wants a clear understanding of the grade and perhaps even a change in the grade because she felt that the grade she received was unfair. The professor is explaining the errors and mistakes in the assignment so that the student can better understand her score. Unfortunately for the student the professor is firm in her scoring and will not adjust the student's score. However, they will discuss possible alternatives for the student to raise her grade throughout the class.
[Performance Approach – demonstrating competence to others; two occurrences]
- 2) The woman in the picture, Beth, is a tutor at a high school. She is helping out a student, Marcus, for his history class. He has a hard time remembering the important information in class and so Beth is helping him review the material so he can succeed in the class. Beth has been working with Marcus for a few weeks now and he has a test coming up so Marcus can prove that his tutoring sessions are paying off. Marcus really needs to pass his history class in order to

continue to play on his school football team. He feels like he is getting a better understanding of the topics that he will be tested over. Hopefully Marcus will prove himself on his test and continue to play football. Although he will continue to use Beth's help to stay on top of his class.
[Performance Approach – demonstrating competence to others; four occurrences]

3) Dan is in a technology/engineering class. He decided to come in after class to work on a final project. His teacher, Mr. Brooks, decided to give Dan some input on his project in order for Dan to receive a better grade on his assignment. There were a few glitches in Dan's project that wouldn't have worked out if his design was carried out. Dan had hit a rough spot so Mr. Brooks is showing Dan some other alternatives that Dan can use to achieve the same yet correct outcome for his design project. Since this is the final project Dan has a lot resting on it and he can feel the pressure. He is currently on the border of receiving an A but it all depends on if he can pull it off. Mr. Brooks is a very understanding teacher and really likes to help his students anyway that he can. He likes seeing his students succeed especially Dan who really has a thing for engineering and can go far with it. Mr. Brooks is actually in the process of writing a recommendation letter for Dan for a few engineering scholarships to help Dan get into a top school.
[Performance Avoidance – demonstrating competence to others; Mastery Approach – solving problems for self and others]

4) Derek, is a student at a university. He is at the top of his class and is bound to be a great doctor. Right now he is taking his last semester of classes on campus before he applies for medical school. He has a break right now on campus and decided to use his free time to study for some entrance exams. Derek has worked hard to get to where he is today. He came from a poor background and really wants to make a name for himself. He fought his way through high school and most of the way through college. Nothing can stop him now he is determined and won't give up. He feels the pressure and sometimes the hard work is too much but he looks at what he has done to get to where he is and reminds himself of the life that he could have had which is motivation for him to continue the hard work. Derek will apply to many medical schools and get into the one of his choice because admission boards will see how determined and dedicated he is to his work.
[Performance Approach – demonstrating competence to others; three occurrences]

5) Sam, is currently working in a Biology lab on campus. She does this on the side in order to make some spending money. She is majoring in Biology and minoring in Chemistry. She really enjoys working in the lab and wants to do it professionally and possibly even get her doctorate and teach biology to future students. She concentrates very hard in lab and it pays off in her Biology classes. Sam is only going to continue her hard work throughout her college career and one day discover a scientific miracle.
[Performance Approach – demonstrating competence to others followed by demonstrating competence to self; Mastery Approach – solving problems for self and others]

Story set with a high performance avoidance score.

1) The girl on the right is a freshmen entering college and is signing up for her first classes. She is very nervous, but also very excited. She wants college to be everything she always dreamed it would be. The counselor that is helping her is very concerned with helping her and giving her the best advice possible. After the freshmen leaves, she will begin moving into her dorm and finding her way around campus. The counselor will be seeing tons of students just like her for the rest of the week.

[Mastery Approach – fulfilling potential followed by solving problems for self and others]

2) The woman in the picture is a working mother of four who has decided to return to college in order to better her career. Unfortunately, with all of her responsibilities, she has fallen behind in a couple of her classes. The man in the picture has been assigned to tutor her. She is very eager to learn, but slightly embarrassed that a younger person is teaching her and that she is unable to learn it on her own. She is very worried that she will not succeed and that her children won't be proud of her. However, she is also very grateful for the man's help because he is at the top of the class and is helping her to understand.

[Mastery Approach – fulfilling potential followed by improving competence; Performance Avoidance – demonstrating competence to self followed by two occurrences of demonstrating competence to others]

3) The student in the picture is in high school and has just been caught plagiarizing a paper. The teacher has called him into the classroom to confront him and decide what to do about it. The student is usually a very good student, but participates in so many extracurricular activities that he ran out of time to complete the paper on his own. He is very worried and scared about how this will affect his future and really regrets his decision. The teacher is also very disappointed. He likes the student and does not want to see him fail. He is undecided as to how he is going to handle the situation. He knows he should give him a failing grade and report him, but he feels compassionately towards the student. In the end, the teacher gave the student a failing grade on the paper, but did not turn him in. He is even allowing the student to write a longer paper on another topic for some extra credit. The student is very relieved and the incident does not end up affecting his final grade.

[Performance Avoidance – demonstrating competence to others; Performance Approach – demonstrating competence to others]

4) The man in the picture is studying while at work for a test in a night class that he has that evening. He has a low-paying job now, but his boss has agreed to pay for his education so that he can become more successful and be of more use to the company. He is very worried that he will fail the classes and let his boss down. He knows that if he does not do well, he will probably be fired. He also knows that there are several of his co-workers who wanted his new position, so he does not want his boss to reconsider his decision to pick him. The promotion has alienated him from most of his other co-workers, but it is a sacrifice he is willing to make because he recently married and they are ready to start a family. He wants to be able to provide more for his new wife and future family. The man does well on his test, and eventually, in all of his classes. He

graduates and is promoted to a much better job. His wife has a baby boy and he is even able to start a college fund for his new son with the money he is making.

[Performance Avoidance – demonstrating competence to others, two occurrences; Performance Approach – demonstrating competence to others]

5) The woman is a student in her fourth year of medical school. She is participating in her chemistry lab and is very intent on what she is doing. However, her mind is on other things and is finding it hard to concentrate on what she is doing. She is thinking about another student in her lab whom she has a crush on. She is not the prettiest girl and is very shy, so she feels that she will never be able to tell him how she feels. Her plan is to do exceptional work in the lab, and hope that he notices. He is not as good as a student as she is, so she even hopes that the teacher might instruct her to tutor him. However, at the end of the day, she knows that neither of these things will happen. She eventually gets over the boy and moves on to someone who actually appreciates and notices her.

[Performance Approach – demonstrating competence to others]

Story set with a high mastery approach score.

1) this is a work place and the lady behind the desk is her boss. they are discussing some work that the employees working on and she is kind of scared about what her boss is telling her about her performance. they are working on a presentation that they will have to give in a few weeks to a group of higher up people like the CEO and the financial person. the meeting is taking place in the bosses office and she is explaining what she is looking for in the report. They are excited if this goes well because they will get a new office space for the plans. They are trying to decide what is the best way to approach this. the employee is doing a great job on the project and she is being told that by her boss. They are looking at the ideas that were presented from an earlier meeting and trying to incorporate them all in the plans. for the future the plans are great and they are moving on.

[Performance Approach – demonstrating competence to others]

2) these are a couple of team members who are trying to solve a problem. they are looking at all of the data and they are stumped at where the problem is. They are trying to find a needle in a haystack as the saying goes. They are getting frustrated and the African American person is sitting back and letting the other lady take the lead because she knows that if things go wrong then the other lady will be getting into trouble. they will find the problem and things will be working out fine for the both of them.

[Mastery Approach – solving problems for self and others, two occurrences; Performance Avoidance – demonstrating competence to others]

3) this man is a big executive and he is reading a report for his company and trying to figure out what is happening with the company. He is really engrossed in reading this report that he is not aware of his surroundings. he really likes his job and he enjoys what he is doing. he wants to move up the corporate ladder and try to make it to the top some day. his employees under him really like him and they try to do a good job too. He is thinking that if he can get this report read

then he can go take a break and get some food since he missed breakfast this morning. in the end he will find the problems with the report, his boss will be happy with his performance and he will get an nice big raise. then he will move up the ladder to the next position. So he is on his way to his dream while doing the work that he loves to do.

[Mastery Approach – improving competence, two occurrences; Performance Approach – demonstrating competence to others, two occurrences]

4) This person is a single parent and after working all day long then they are tired and they decide to take a break and go to the park and read the paper while the weather is nice. she is wondering what happened in her life to make her get to this point. The kids are busy with school and activities that she is stressing over how to pay for and who will take and pick them up if she has to work over time. she is thinking though that she is lucky to have such great kids and she is so proud of them even if they wear her out. She is making the best of things and trying to take care of herself in the process. They will survive all the changes and the kids will grow up to be just fine and she will have the money to pay for all of the things that she did worry about.

[Mastery Avoidance – solving problems for self and others]

5) This lady is a scientist and she is trying to find a cure for some awful disease and she is experimenting to see if the new changes she made will work. She is in the lab with other dedicated people who want to help cure the world. She tried this experiment before and it did not work it had no results. She has modified this procedure and is trying it again to see is she can come up with some good results. She is thinking that if she can get this to work then they will have a cure some awful disease. She is happy about that thought. she is feeling like things are not going well though. She had to wait for the results to come back and they are still not working so she needs to try again.

[Mastery Approach – solving problems for self and others, three occurrences; – improving competence; -- solving problems for self and others; Mastery Avoidance – solving problems for self and others; Mastery Approach – improving competence]

Story set with a high mastery avoidance score.

1) Laura was going to the most important job interview of her life. Her nerves were on edge. She really wanted this job. When she walked into the room she met Diane who would give her the interview. Diane wanted to make sure that Laura was right for this job and knew that the interview would be tough. Laura didn't know that she was the perfect candidate and Diane didn't want to hire someone who wouldn't work out with the company; its work was too important. Laura went through the normal process; she was polite and knowledgeable, she thought. That's when Diane had to tell Laura that there were secrets involved with this line of work and the add Laura responded to wasn't entirely truthful or complete. "What have I got myself into?" Laura thought to herself when she heard this information, "What kinds of secrets are there?" Diane admitted that the company didn't like having to talk about their real purpose but that it was sometimes needed for their agents to track down certain special people that the company needed to see to collect data on them, and this would be Laura's job.

[Performance Approach – demonstrating competence to others; -- demonstrating competence to self; Mastery Avoidance – solving problems for self and others]

2) Justin was a smart student and he knew it. That's why he started tutoring. It was when he met Kennedy that everything changed. She was incredibly intelligent but just had problems remembering what the information in her book was about. Justin knew that he would have to work hard to help this one. First, he told Kennedy about a couple of techniques he knew to help people remember information, like mnemonics. Then he opened her book and started to go through the pages with Kennedy to see what she knew and what she forgot. Kennedy was good with her comprehension of the material so Justin started to wonder whether Kennedy couldn't remember the material or whether she just didn't understand the material.

[Mastery Approach – solving problems for self and others]

3) The diagrams in the manual just don't make sense. Steve said to his lab partner, Chris. "They just show what we're making, not how to make it." But Chris was a step ahead of him. He was going through his notes to see how this piece was described by their teacher. The teacher had lectured about this during the last class but Chris knew that Steve didn't pay any attention during the lecture. Steve just sat there looking puzzled and confused, not saying anything, while Chris started to draw up the blue prints based on his class notes. Chris knew this was why paying attention in class was so important. "Steve, I think this is a test to see what we are capable of doing without specific instructions. Maybe you should look at my notes, they might help you." But Steve was reluctant, why would the teacher do this to them, why would he make it to where they couldn't do this project without their own ideas. Chris knew why, this was separating the doers from the thinkers and he knew which side of that equation he was on.

[Performance Approach – demonstrating competence to self]

4) Michael was in advanced physics and he had the best grade in his class. But that didn't change his nerves about the final that was later today. He knew that he needed to ace the final if he wanted to get into graduate school. The real conflict he felt was whether he wanted to go to graduate school. It was his mother's dream, not his. She was desperate to see her son become

somebody because of her own feelings of inadequacy. She was never a good student, wife, or mother because she was more concerned about herself and her image than her own family. Michael just didn't know if this was what he wanted for himself. "I'll take this final, then I'll decide." was what he had been telling himself for weeks. But, on the day of the final, now he was unsure. How would his mother feel if he just didn't show up for the final. Would that be enough to carve out the right of choosing for himself, or would that solidify her thoughts that he would never succeed without her helping him every step of the way?
[Performance Avoidance – demonstrating competence to others; Performance Approach – demonstrating competence to others; Mastery Avoidance – fulfilling potential; Performance Approach – demonstrating competence to others]

5) Janette never felt intimidated in her field until she took this job. She knew that she worked in a man's field and that she would have to work harder than others to earn even a minimal amount of respect from her co-workers. She also knew that she couldn't give up, that would just make it harder on the next female that walked through their door. She would just have to suck it up and do her work better than anyone else there. She figured that everyone would have to respect the best. Then the real problems started though. She would find her work station a mess, even when she remembered cleaning it up. Her assignments would go missing when she was in the middle of them. Her equipment would go missing during the middle of the night. She knew what it meant, she knew who was doing it, and she knew what she needed to do to stop it. She didn't go complain to her boss, she didn't cry and she didn't even get mad. She just got her revenge by stealing other people's assignments and doing them better than that person. Besides, she knew that this crap would stop when she was the one signing everyone's checks.
[Performance Approach – demonstrating competence to others; Mastery Avoidance – solving problems for self and others; Performance Approach – demonstrating competence to others]

Story set with a high combined score.

1) Joanna was a recent college graduate. Going on ten job interviews, she was ecstatic to finally land a position. Upon accepting the job, she rejoiced with her family and friends. Joanna was nervous on her first day of work. But, her co-worker, Annette, made her feel quite comfortable. Annette, who was so excited to have another woman on board at the predominately male office, welcomed Joanna and graciously showed her the ropes. Annette also went through Joanna's HR package with her; insurance, retirement, healthcare and other documents that required signatures took up most of the morning. After a fun lunch together, Joanna continued to have a great day and felt more and more at home. On her way home from work, she bought cupcakes for her entire family to celebrate her first day of work. Joanna couldn't wait to go to her job the next day and, for her first big paycheck.
[Performance Approach – demonstrating competence to others, two occurrences; Performance Avoidance – demonstrating competence to others; Performance Approach – demonstrating competence to others]

2) Shawna had always been embarrassed about her illiteracy. Finally, one night after she tried to read her daughter a book and couldn't, she decided it was time to learn how to read. The very

next day, Shawna trepidly walked into the reading room of her local library to learn how to read. She was nervous people would laugh at her and that everyone else would be 20 years younger. Jay loved helping adults learn how to read. He had grown up with a family who shared a love of books and wanted to be able to share this gift with others. Jay kept track of how many people he taught how to read. His goal was to get to 20 before the end of the year and he was on number 19. Jay was thrilled to see Shawna walk in the reading room and could tell by her hesitant walk that she was having second thoughts about going through with it. Jay introduced himself to Shawna and they got down to work. Shawna thoroughly enjoyed her time with Jay and loved learning how to read. Jay was passionate about teaching and she appreciated how he treated her with respect and dignity. He didn't look down on her just because she couldn't read. Two months and hours of hard work later, Shawna declared herself a bookworm. She poured herself into novels and magazines. Her daughter had to remind her to make dinner and pick her up at school because she couldn't get her head out of her books. Shawna decided to thank Jay for his dedication to teaching her how to read by writing an editorial in the local newspaper about him. [Performance Avoidance – demonstrating competence to others; Mastery Approach – improving competence; Performance Avoidance – demonstrating competence to others; Mastery Approach – solving problems for self and others; Performance Approach – demonstrating competence to self, two occurrences; Mastery Approach – improving competence, two occurrences]

3) Kyle and Peter had just met only 2 weeks ago in class and were already spending 12 hours a day together working on a physics project. Kyle, who had just received his undergraduate degree felt tired of school and in need of a break. Peter, on the other hand, had worked for 15 years as an accountant and decided to go back to school to get Masters in Physics which had always been his passion. The project seemed difficult but the two were relieved they got along well. Kyle appreciated Peter's excitement about being back in school and Peter loved how Kyle could teach him what was going on with younger students. Spending so much time together, a father-son bond soon formed between the men as they worked diligently on their physics project together. By the end of the semester, their project was complete. The two celebrated with beers at the local pub and Peter invited Kyle to celebrate Christmas with his family. After graduation, they went into business together and prospered greatly. They were always thankful for their physics class where they met.

[Mastery Approach – improving competence, two occurrences]

4) Damian was getting pissed. He had proposed to his girlfriend only 2 weeks ago and she had already created a booklet of things for him to do. Not only that, but she wanted him to "study" wedding vows that other people had created so he would be inspired to create his own. He really loved Tamara but she was turning into a "bridezilla". Damian confided in his mom about his concerns with Tamara. She calmly told him about women and their dream of the perfect wedding. Damian decided he wanted to start his marriage out on good footing and to do that, he would do anything Tamara wanted him to. Even though his co-workers gave him a hard time for studying during lunch break instead of hanging out with them, Damian stayed true to his word and helped create a wonderful wedding for himself and Tamara. On their wedding day, Damian recited his vows to his bride and made the entire congregation weep. His words of promise and love were never forgotten by anyone. Years later, on their 50th wedding

anniversary, Damian read them again to his love. They shared a wonderful life together and it all started with the commitment of one man and one woman.

[Performance Approach – demonstrating competence to others]

5) Tracie couldn't believe she had to work alone on the chemistry project. She knew no one wanted to be her partner because she didn't have enough money to buy new glasses. They were huge and embarrassing. Tracie decided to buck up and show everyone that her project would be the best. She worked late into the night and on the weekends. Her passion for chemistry intensified sometime during that semester. She received an "A" in the class and decided to make chemistry her life. Ten years later and with a makeover to boot, Tracie discovered the cure for cancer and received a noble peace prize. Now, she had so many friends, it didn't matter what she wore.

[Performance Approach – demonstrating competence to others; Mastery Approach – improving competence]

Appendix I

Modified Achievement Goal Questionnaire

Elliot & McGregor, 2001, revised by Cury et al., 2006

The following statements are about your goals for your courses. Please indicate your level of agreement or disagreement with each item by choosing a number on the keyboard.

1	2	3	4	5
Strongly				Strongly
disagree				agree

Press space to continue to the first question.

1. My goal is to completely master the material presented in my classes.
2. I want to do well compared to other students.
3. I want to learn as much as possible.
4. It is important for me to do better than other students.
5. My goal is to avoid learning less than I possibly could.
6. It is important for me to avoid doing poorly compared to other students.
7. It is important for me to understand the content of my courses as thoroughly as possible.
8. My goal is to perform better than the other students.
9. I want to avoid learning less than it is possible to learn.
10. My goal is to avoid performing worse than other students.
11. It is important for me to avoid an incomplete understanding of course material.
12. I want to avoid performing poorly compared to others.

Appendix J

Correlations among Independent Variables

Table 10

Correlations among Word Counts and Implicit Goal Scores (N = 120)

	Mean word count	1	2	3
1. Performance approach	-.17			
2. Performance avoidance	-.16†	.01		
3. Mastery approach	-.12	-.15†	-.13	
4. Mastery avoidance	.07	-.05	.13	-.14

† $p < .10$.

Table 11

Correlations among Self-attributed Goal Scores (N = 120)

	1	2	3
1. Performance approach			
2. Performance avoidance	.67**		
3. Mastery approach	.24**	.25**	
4. Mastery avoidance	-.00	.09	.37**

** $p < .01$.